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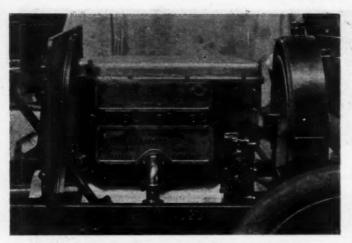
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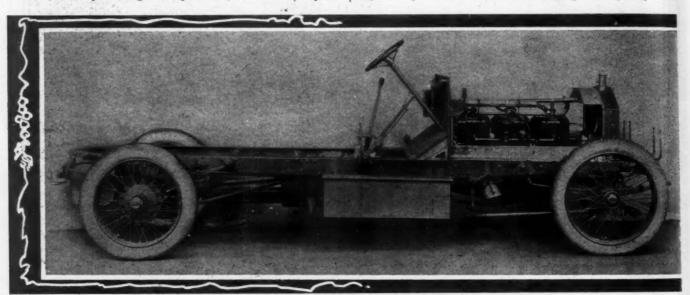
Bentall & Company's New Slient Piston Valve Engine

facturing firms have been unable to secure space. Among these unfortunates must be numbered the agents of the Mercedes, who, owing to reconstruction of their company, were not in a position to put in an application till too late. Other than Mercedes no firm of any standing is unrepresented, and hence it may be

at 10 o'clock Saturday morning, when the doors were opened without any official ceremony, every car was staged in position so that the salesmen and attendants were not unprepared when the flood of visitors poured in. Such a crowd on the opening day has not been recorded at any previous exhibition, and from the number of orders and promising inquiries that have already been in evidence, all the leading exhibitors are beginning to conjure up visions of a thoroughly good year's business. A remarkable feature, too, is the number of foreigners that are at the show. French, German, Belgian and Italian motorists are everywhere to be seen, volubly discussing the various features of note, and obviously impressed with the extent and quality of the British exhibits.

There is a curious absence of what might be called artificial attractions—such as racing cars or vehicles of historical interest—artificial because such productions bear little, if any, relation to the ordinary productions of the exhibiting firms and are obviously staged merely to attract the crowd. Not a racing car is to be found, while of the second category mentioned above, the sole example is the Arrol-Johnston car which accompanied Lieutenant—now Sir—Ernest Shackleton on his recent South Polar expedition. Instead, all the cars are honest examples of the firms' productions and are staged as such.

A detailed inspection of the cars reveals many tendencies of design-many features of interest-which previously may have



45-Horsepower Napler Exhibited at Olympia Show-Note Governor Opposite Cylinder No. 4, and Rear Spring Attachment

rightly stated that a more complete exhibition than Olympia would be quite an impossibility.

Opening Marked by Readiness of Exhibitors—A sign which augured well for the success of the show was the fact that

Engine of an Argyll, Showing Many New Features

been used on one or two cars, but which are now becoming general practice. It may be of interest to have these features noted down before the individual cars are dealt with.

Lower Powers Now the Thing—In the first place there is a marked decrease in the average power of the cars. The high efficiency of the present-day engine and transmission enables the car of medium power to set up standards of performance which, a few years ago, could not have been surpassed by the biggest touring car made.

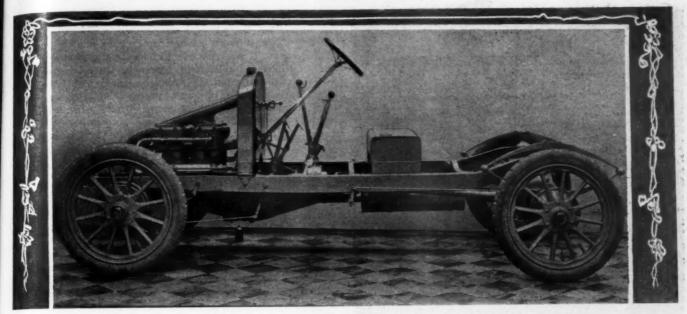
Both this fact, and also the general increase in taxation, in this country and in France and Germany, have made manufacturers turn their attention to the small car as something for which there is a growing demand from all classes, and the result is the 15-horsepower model which is to be found everywhere—Napier, Daimler, Fiat Itala, Austin (Mercedes also, though not exhibited), and a host of others. There are the other cars, of course, of lower and higher powers, but this 15-horsepower model is evidently considered to be a type for which there will be a very large sale. The average 15-horsepower engine has a bore and stroke of 80 x 120 mm, though the stroke might even average more than this amount. The cylinder dimensions constitute the only point of agreement, for the methods of construction differ in every imaginable way. The cylinders are cast in

1909

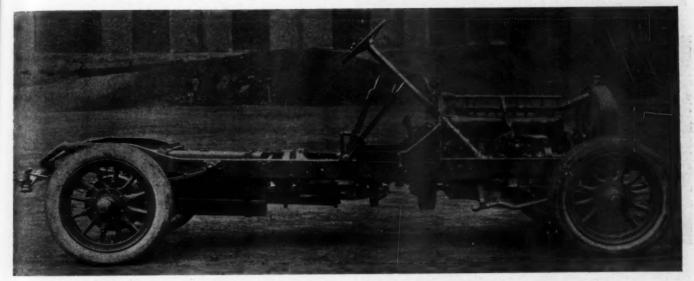
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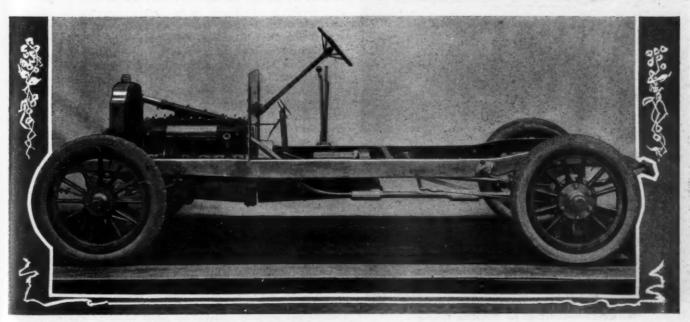
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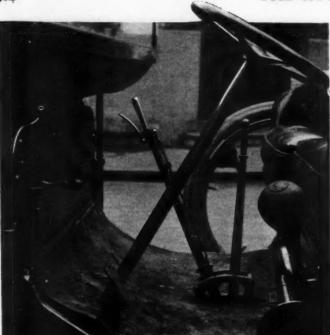
Chassis of 15-Horsepower Arrol-Johnston with Radiator Located on Dashboard, a la Renault



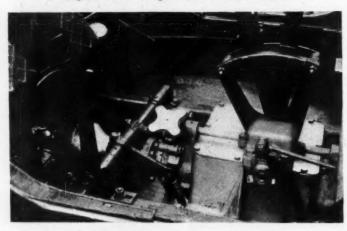
40-50-Horsepower Woiseley with 6 Cylinders Cast in a Block and Applied Sheet Metal Jackets



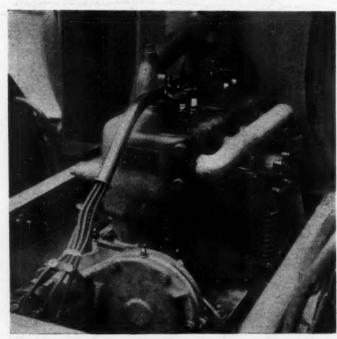
27-Horsepower 6-Cylinder Vauxhall Has Unusually Large Rear Brake Drums



Bayard-Clement Light-Car Left-Hand Control



Pedals on Left, Gear Box, and Direct Control



Bayard-Clement 4-Cylinder Monobloc Engine

singles, pairs and fours, with perhaps a balance in favo of this last type.

Some of the castings, which frequently include the top half of the crankcase, are truly wonderful examples of the molder's art. The inlet and exhaust passages the latter being equipped with radiating fins) are included in the eastings, and the resultant simplicity is such that, until a close inspection has been made, one inclines to the belief that some parts have been intentionally omitted.

Many Unit Power Plants Seen-This construction makes a very neat engine, and the pleasing effect is increased when, as is the case with half a dozen cars of this type, the crankcase is connected by side arms to the gearbox casting, so that the engine and gearbox are combined to form a single unit. The Star, Imperia and Napier 15-horsepower cars are built on this plan, while the last named has its flywheel at the front of the engine, with the result that the connecting arms need not be cranked outward.

The rate of increase in the number of six-cylinder cars has not been maintained, and it would be difficult to mention any new firm which has taken up this type. Many of the leading makers show a high-powered car with six-cylinder engine, as usual, while the only concern which confines its attention solely to this type is Rolls-Royce, whose 40-50-horsepower car, of long-distance trial fame, is staged almost without alteration. Six-cylinder engines are usually found with cylinders in pairs, though Rolls-Royce and Delaunay-Belleville have two sets of three cylinders and the Wolseley has a single casting for the six cylinders. In the case of this last, the water jacket is made of sheet steel screwed to the casting in the same way as employed on this firm's successful aero engines. The new eight-cylinder 35-horsepower De Dion is staged, but this is, of course, alone in its class.

More Bearings on Crankshafts-Regarding the further engine features (dealing with all types) there is a tendency to provide the crankshaft with the full number of bearings whenever possible-five bearings in the case of the four-cylinder engine, instead of the three frequently used in previous years. Ball bearings have disappeared from the crankshaft except in the case of the smallest fours, which in this case have but two bearings for the four-throw crankshaft. Both these changes are doubtless caused by the fact that the present-day engine parts have to withstand much more shock and hard work than ever before on account of the lighter construction and the higher compression employed-85 to 90 pounds being the pressure for some of the medium-sized engines.

When the subject of valves is mentioned, sufficient matter is at hand to fill pages. The success of the Knight sliding-sleeve engine (which is only shown on the Daimler and Minerva stands, for the Panhard company have not yet completed their first cars with this engine) has turned the efforts of all designers in this direction, and it is an open secret that the majority of the wellknown firms have been experimenting with sliding valves during the past year. Apparently their efforts have not been rewarded with success, for but two new engines have appeared-the Hewitt and the Benthall-both with piston valves working in cylinders communicating with the main combustion chamber. These engines will be described later. There are several examples of two-cycle engines, but this type does not yet become popular, though it is by no means unlikely that the next show will reveal a big advance in this construction.

Larger Valve Sizes Noticeable-The poppet valves of the usual type have been considerably increased in size so that in many cases the valves have now to be placed on opposite sides of the cylinder. The provision of a cover plate in front of the valve stems finds much favor.

Accessibility is a matter which has clearly been kept prominently in the mind of the designer-not only with regard to the engine, but also the other parts of the car. Quite the standard practice now is to fit a cross-shaft at the front of the engine, driving the pump at the one end and the magneto at the other. Usually this shaft is operated by spiral gears so that the noise

pumps and Lubricat tion which pletely for show, the requires 1 the metho with the more hav which th supplied As the t excess o haust, w filled as pump.

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set up by the latter after continued use may be obviated. Both pumps and magneto are easily detachable.

Lubrication is a matter that has received the amount of attention which it merits, and the result is that, instead of the completely forced system, which was introduced largely at last year's show, there is a tendency to adopt a semiautomatic system which requires no attention on the part of the driver, and yet avoids the method of drilling the crankshaft and other parts inevitable with the forced system. Daimler, Wolseley, Minerva and many more have the oil splashed to the bearings from troughs into which the ends of the connecting rods dip, and which are kept supplied by a pump situated at the bottom of the base chamber. As the troughs have only a limited capacity, it is impossible for excess of oil to reach the pistons, and so to cause a smoky exhaust, while at the same time the troughs will always be kept filled as long as there is sufficient oil in the engine to fill the nump.

High-Tension Magnetos Almost Universal—Regarding ignition, high-tension magnetos are, of course, all but universal, and it is noticeable that the magnetos are much smaller in size than hitherto. The Albion and Lanchester still pin their faith to the low-tension magneto, with make-and-break on the engine, and some of the high-powered Italian cars have low-tension magneto, the special magnetic plugs. The small Italian cars, however, have high-tension magneto, usually without provision for advance or retard of the contact-breaker. With British cars, on the other hand, it is usual to fit a lever to actuate the magneto advance.

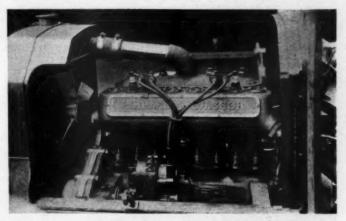
Quite a number of makers have abandoned the use of separate ignition systems—magneto and battery with coil—and instead have favored one or the other of the many dual magneto systems, in which the magneto distributor and the single set of sparking plugs are used for both ignitions. This was tried half a dozen years ago, but at that time neither the magneto nor the plugs were so reliable that it was safe to dispense with a second ignition system as a stand-by.

Two Sparks Created Simultaneously—One car—the Hobson—has adopted the double-pole plugs which have been introduced lately, so that two sparks are obtained at separate plugs from the single magneto. A distinct increase of power is said to result from this arrangement—particularly at high speeds.

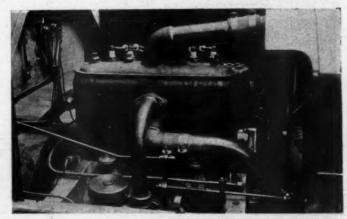
This point is worthy of investigation, for the tendency, at the present time, is certainly toward the use of high engine speeds. Due to this increased speed more attention has had to be paid to the matter of carburetion, with the result that, in addition to the use of air instead of exhaust pressure for the fuel feed to the carbureter, the latter is either of the mutiple-jet type or else has been equipped with an automatic air valve of such construction that the engine is not starved at high speeds.

For the cooling, thermosyphon circulation is growing in favor. When a pump is fitted this is almost always of the centrifugal variety, which is more quiet in action than the gear type. The piping, too, is much better arranged than has been the case in the past, when U-bends were frequent sources of air locks and overheating troubles. There are fewer radiators of the gilled-tube type, flat copper tubes being used instead. Experiments have clearly shown that the latter are more efficient, besides being lighter in weight. Fans are still of all shapes—some being made merely of flat pieces of steel, while others are aluminum castings of approved propeller form. In many cases the fan is driven by spiral gearing, from the pump and magneto cross-shaft, thus enabling the troublesome leather belt to be dispensed with.

Leather Cone Clutches on the Gain—Leaving the engine, a review of types of transmission gear may be given. The increased flexibility of the engine calls for less work from the clutch, so that the simpler leather cone form is maintaining its position. Disc clutches are not increasing in numbers, but there are several new cars with the contracting-band type. As usual, there is a clutch of the hydraulic type which is said to be very efficient and to enable the gearbox to be omitted, but it has yet to prove its claims.



Panhard 12-H.P. Monobicc, Valve and Magneto Side



Panhard 12-H.P. Monobloc Engine, Carbureter Side



Clutch and Gear Box of Panhard 12-H.P. 4-Cylinder



Rear Axie of Panhard 4-Cylinder Shaft-Driven Car

The engine improvement is also the reason why on many cars there are now only three speeds instead of four. Where four speeds are provided, the third is usually direct drive, and the fourth geared up for fast running. The gate change is all but universal, examination revealing only the Renault and Delaunay-Belleville with the old quadrant type. At the rear axle worm driving is rapidly becoming popular, quite a dozen cars being so equipped. Opinion seems evenly divided as to whether the worm should be above or below the worm wheel, the latter giving better lubrication, but at the expense of reducing the road clearance. Chain drive is all but extinct.

Torque and radius rods are likewise a matter upon which there is much diversity of opinion. Many firms—such as the Itala, Hotchkiss, and Daimler—have no fittings of this kind. could be called pleasing in appearance. This body seems to suit the Renault bonnet best. Several British cars—the Deasy, Arrol. Johnston, and Sheffield-Simplex—have adopted Renault lines, 30 that there must evidently be a demand for cars of that appearance. Covered bodies of many types are staged, but these will be dealt with later.

AMERICANS TOUR IN AMERICAN CARS

A feature of the development of foreign touring is the number of Americans who now visit Europe in American automobiles. Everything has been made so simple by the various touring associations that the American automobilist plans for a tour through Europe with as little fear of difficulties as if he were



General View of the Olympia Automobile Show, Which Excelled All Former British Exhibitions

relying on the rear springs to take the drive, while other firms of equal standing—Fiat, Renault, and Napier—invariably fit torque rods. The tendency, if any, seems to be in the direction of dispensing with all rods.

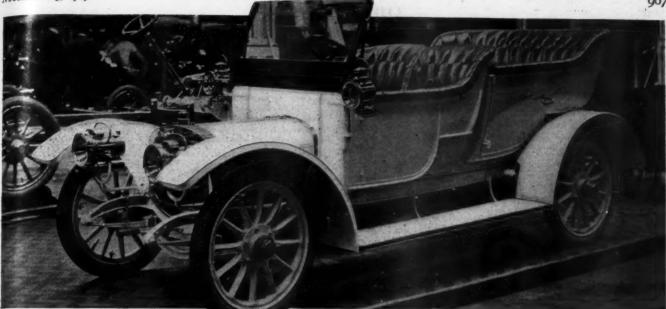
Wire Wheels Growing More Popular Daily—Wheels of the wire type are growing greatly in popularity, while half a dozen forms of detachable wheel are to be found. Similarly front wheel brakes seem likely to come into general use, for such firms as Arrol-Johnston, Crossley, Motobloc, and Sheffield-Simplex fit this type on all cars. On other cars a band brake is fitted on the propeller shaft and internal-expanding brakes at the rear hubs. In some cases the latter are actuated by the foot pedal, reversing the customary arrangements.

To deal finally with completed cars, there has been an extraordinary craze for torpedo bodies. Examples of various designs are to be found on almost every stand, but there are few that about to make a run through the Berkshires. This is largely due to the establishment of European branches by American manufacturers, keeping in stock all the repair parts.

The extent of this movement is shown by the fact that three leading factories have opened Paris touring bureaus in the last two years. N. S. Goodsill, in charge of the Pierce-Arrow Motor Car Company's Paris branch, reports 112 automobiles of that make in the first nine months of the year and an estimate of 125 for the whole year. "The greater number of automobiles are the large six-cylinder models, carrying five to seven persons," he states. "They usually remain in Europe from six weeks to two months, visiting France, Germany, Italy, and England principally. Intending tourists should obtain membership in the Touring Club of France before leaving New York, and at the same time secure a triptych for passing the French, Italian, or German customs if they land in one of those countries.

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14-16-Horsepower Sunbeam Touring Car Inclines to the Torpedo Style with Curves and Straight Lines



Exhibit of 10-12-Horsepower Humber, Which Also Shows the Torpedo Influence, but Is All Curves



26-Horsepower Sporting Metallurgique Has the Driver Enclosed, the Single Door Being in the Middle

WHAT M. C. A. RECOMMENDS TO INTERNATIONAL CONFERENCE

THE Manufacturers' Contest Association wherein are represented all those American makers who are concerned in competitive events, has supplied the Automobile Club of America (which serves as the spokesman for this country in the international conference) with a definite consensus of opinion of what is desired in the way of international racing rules for 1910. The recommendations call for the participation of stock cars or stock chassis only, in international events, same to be classified according to piston displacement and minimum weight.

This logical and advantageous classification has given excellent satisfaction in this country, and the ideas of the American makers will be presented by William S. Hogan, the A. C. A. delegate, at the meeting to be held December 7 in Paris. These are the recommendations of the M. C. A.:

First: That only bona fide stock cars or stock chassis be eligible for entry in international events.

Second: That cars entered in international events be classified as follows:

Open to any chassis which is in accordance with the definition of "Stock Chassis" and in accordance with the following table of piston displacement and minimum chassis weights:

d	vision		. Piston Displ.	Minimum Weig
	1		and under	
			to 230	
	3	231	to 300	
	4	301	to 450	2.100
	5		to 600	2.400
	6	601	and over	2 600

No car shall compete in any class above that to which its weight entitles it.

These recommendations are along the lines which will govern automobile competition in America for the coming year, with the possible exception of the larger classes. As the American manufacturers will no doubt build "stock cars" up to the limit of each of these piston displacement classes, should a similar classification be adopted internationally, it would enable foreign and American cars to compete on even terms and should serve to stimulate international competitions.

HEMERY'S REMARKABLE WORLD'S RECORDS AT BROOKLANDS

ONDON, Nov. 15-In view of the approach of Olympia, several makers worked hard at Brooklands in the endeavor to set up new records. Two performances, in particular, are very creditable. A stripped 60-horsepower, six-cylinder Thames chassis was driven by Smith on Friday last with an eye to the long-distance records. The car ran well throughout, and only one stop was made, to change a rear tire, was occasioned during the 300-mile run. The new records are as follows:

50 miles 34:02 88.1
1 hour 89½ miles 89.5
100 miles 1:06:54 89.7
2 hours 173½ miles 86.7
200 miles 2:17:56 87.1
3 hours 261% miles 87.3
300 miles 3:30:1\$ 86.0 m.p.h. m.p.h. m.p.h. 200 300 miles

Probably the most noticeable thing about these new figures is the remarkable evenness of the running, the average in miles per hour differing but little for three consecutive hours. Thus, for the first hour, the average of 89.5 differs from the figure for the second 60 minutes by but 2.8 miles. During the course of an additional hour's driving the rate of speed was so improved as to bring this up to 87.3 miles, a raise of .6 miles, and reducing the difference between the multiple hour figure and the first hour figure to 2.2. Whatever else it may be called, this is remarkably consistent driving, and redounds to the credit of the driver, who is practically unknown outside of this country. The new records, too, are to the credit of a car which is little known outside of the home country and the colonies, the name being a stranger to the Continent and America.

On the same day Hemery ran his 85-horsepower Benz for the short records, but deferred his final attempt for Monday. On this day he met with more success and succeeded in lowering all existing figures, beating the flying kilometer record, which has stood to the credit of Marriott since the Ormond-Daytona meet of 1906. Hemery's official times are:

A noteworthy thing about both attempts at the flying start records is that the longer distance record is at a higher speed than the shorter one. In this the flying German did not entirely outdo the American, for the average speed of the latter for the mile, made on the same day and at the same time and place as the now-broken kilometer record, was at the rate of 127.65, which Hemery just barely changed. The latter was the official fastest rate of speed, surpassing even the mark made by Demogeot, when the latter won the speed crown. The figure made then was but 123.3 miles per hour, so that Hemery now not only holds the distance, but the average speed record as well.

BIG THINGS EXPECTED AT INDIANAPOLIS SPEEDWAY

NDIANAPOLIS, Nov. 22-A race meet over the new brick surface of the Indianapolis Motor Speedway probably will be held on December 11. The course is now about half paved, and it is believed it will be completed about December 5. The meet will include everything from one-mile trials to establish a new track record, to a 1,000-mile race.

Ernest A. Moross, director of contests, has been induced to withdraw his resignation, which was to have become effective on November 15. He is now at work preparing the program for the proposed meet. As soon as he was in a position do so, the dates for the coming meet, the first on the brick surface, were announced. The first meet is scheduled for either December 10 or 11, to be decided within a day or two, and depending partly upon the ability of the paving contractor to finish the brick paving.

It is said that the services of all the record breakers at Atlanta

and New Orleans have been secured for this meet, at which nearly every record mark from the quarter mile up to the 1,000mile will be tried for. The competitors will be divided into the usual classes, 1, 2, 3, 4 and 5, as well as the free-for-all. In the shorter events, up to 50 miles, the free-for-all competitors will be started first, and followed by the class-cars. In the longer events large fields are figured on, up to 15 cars per event. In all of these events no entry fee will be charged, the expense of holding the meet being met wholly by the grandstand admissions.

When interviewed relative to the coming record-fest, Mr. Moross was very confident of a speed of two miles per minute for the new track, not alone for a mile or two, but maintained for many successive miles. He has just returned from Atlanta, which track he admitted was very fast, much faster than the old Speedway surface, but not as fast as the new brick covering.

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MARMON STARS IN NEW ORLEANS GOOD ROADS RACE MEET

NEW ORLEANS, LA., Nov. 21—Ray Harroun, in his Marmon stock car, proved the bright particular star of the Good Roads meet of the New Orleans Automobile Club. He won two firsts and two seconds in the four events which he entered on the first day, and one first and two thirds in three events of the second day.

The first day's racing had a slight scarcity of entrants, due to the non-arrival of a carload of machines, belonging to Barney Oldfield and other prospective competitors, which had been shipped from San Antonio. However, the weather was ideal, and a fairly large crowd turned out. The track seemed in good condition, but did not produce quite the speed expected, as no records were broken.

The feature of the afternoon was the second event, a 20-mile race for stock cars, in which the principals were the Marmon, Aitken's National, and Basle's Renault. Mile after mile these three cars were bunched, many times passing the grandstand wheel and wheel. Harroun finally moved into the lead, winning by two lengths from Aitken.

The 50-mile race started out in the same fashion, but tire trouble and minor accidents soon put many of the contestants out of the running, and spread out the others. Harroun finshed with 10 miles to spare in 54:00 3-5. He ran a consistent race, without a single stop. Summaries:

FIVE-MILE MATCH RACE

Pos. Car Driver Time 1 Chalmers-Detroit
TWENTY-MILE STOCK CHASSIS, A. A. (Class 2, Pistor Displacement 301 to 450)
1 Marmon
FOUR-MILE LOUISIANA CHAMPIONSHIP
Open to Equipped Cars Owned by Citizens of Louisiana; Prize Gov. J. Y. Sanders' Trophy.
1 Buick
TEN-MILE HANDICAP FREE-FOR-ALL
1 Renault Basle (30 sec.) 10:5 2 Marmon Harroun (scratch) 3 National Aitken (scratch)
FIVE-MILE FREE-FOR-ALL
1 National
FIFTY-MILE, TWO CLASSES (Class 2, Piston Displacement 30 to 450; Class 4, Piston Displacement 161 to 230)
Prizes, \$50 to Winner; \$25 to First in Each Class.
Class 2:
1 Marmon
Class 4:
1 Marmon

Oldfield Appeared the Second Day-The missing carload of racers appeared late Saturday afternoon, and were quickly put in condition to participate. Barney Oldfield brought out his big Benz and attacked the one-mile record for the track, held by Ralph De Palma at 0:54 1-5. Barney's dash around the oval clipped off the superfluous fraction and set a new record at 0:54 flat. In an effort to lower the 50-mile record the Benz blew out a tire on the eighteenth mile, and the trial was declared off. The first 15 miles were covered in 14:04.

Kirscher, driving W. H. Pickens' Darracq, won the 10-mile handicap from Harroun and Aitken in 10:35, and lost a five-mile match race with Oldfield only by about the "thickness of a tire." The time was 5:173-5. Kirscher made the fastest 10 miles of the day in the free-for-all handicap, his time being 10:16 3-5. He finished second to Basle, the latter having 1:15 handicap.

In the last event of the afternoon, the 100-mile race, Harroun came into his own again. Aitken held the lead for 80 miles, hav-

ing a lap on Harroun at that distance, but he had ignition trouble and was forced to withdraw. Summaries:

TEN-MILE HANDICAP

2	National		DriverKirscher (sAitken (25Harroun (s	sec)	
F	IVE-MILE	SOUTHERN	CHAMPIONSHIP feurs)	(Amateurs o	r Chauf-
2	Marmon		SpeerSwobodaWalker		
M	ILE TRIA	L FOR TRAC	K RECORD (Held	by DePalma,	0:54 1-5)
	Benz		Oldfield		0:54
1 2	Renault Darracq		Basle (1:15	scratch)	



Oldfield of Early Days in Ford "999" Record-Breaker

	FIVE-MILE NEW ORLEANS CHAMPIONSHIP
1	Bulck
	FIVE-MILE SPECIAL MATCH RACE
1	Benz Oldfield
2	DarracqKirscher
	ONE HUNDRED MILES
1	Marmon1:47:14
2	Marmon
3	Chalmers-DetroitCowell

MANY ACCIDENTS MAR SAN ANTONIO RACES

SAN ANTONIO, TEX., Nov. 20-While the automobile races held here this week were very exciting, and a high grade of sport was furnished the spectators, the sport was much marred by the accidents, which not only were dangerous to the competitors, but by narrowing the field, reduced the fierceness of the competition.

Robert Burman had a very narrow escape in the six-hour race when his Buick overturned. The car turned a complete somersault, but, fortunately, "Bobbie" was not injured. Barney Oldfield started at the wheel of a Knox, but a broken connecting rod soon put him out of the running. One of the Stoddard-Daytons broke a front wheel, and a Jackson, which had been following too closely, had to be driven over the banking to escape another collision. The six-hour race was won by Benjamin Johnson.

CHARLESTON, S.C. WANTS CONNECTION SOUTHERN NATIONAL HIGHWAY

M.B. Payne, Jr.

Capyright, by Undergood and Dadaswood, New York

Historia City of the South So

CHARLESTON, S. C., Nov. 22—Among the most attractive cities in the South, and one that should not be missed by motorists, is Charleston, S. C., which, with its historic interest and natural beauty of situa-

tion and surrounding, holds a position not to be surpassed by any of the other cities. Due to a lack of interest in obtaining better roads, the development of automobiling has perhaps been a little bit slower here than elsewhere, but an entirely

new era is dawning which promises to put the "City by the Sea" in the foremost ranks of good roads and motoring enthusiasm. Inspired and encouraged by the enthusiastic good roads campaign now in force through the South, the Charleston Automobile Club is taking active steps to secure the cooperation of other towns and cities to build a highway connecting this city with the New York-Atlanta highway,

through Columbia, S. C., and thus to open up the shortest way for Northern auto-tourists wishing to go by road to Florida by way of Charleston and Savannah, Ga.

Local good roads work is under the supervision of the Charleston and Summerville Highway Commission, and the Sanitary and Drainage Commission, in both of which Col. James Cogrove is an active member. The efforts of these two commissions have resulted in building fine cement gravel highways extending in two directions from the city. The road to Summerville, the famous Winter resort in the pinelands, is the most popular and will be part of the projected highway connecting this city with the New York-Atlanta route.

Leaving the western part of the city over the Ashley River bridge, the other highway will pass through the largest truck-farming districts in the United States, where vegetables and fruit are shipped by hundreds of carloads all over the Eastern and Middle States. This road, after crossing five rivers, leads to Savannah, Ga., a distance of about 130 miles from this city, paralleling most of the way the tracks of the A. C. L. R. R., over which the entire Northern tourist travel goes to Florida. The working up of this highway will be due to the continued efforts of the Savannah Auto Club and the local club.

Another roadway which in time will be taken up for improvement is the one leading out of the city over Cooper River by the ferryboat of the Charleston Consolidated Light & Power Company, to the mainland known as Mount Pleasant. This road skirts the eastern coast of the State, passing through many beautiful old plantations, where rice and cotton are plentiful; through many Winter homes, including the famous reserve of the Santee Hunting Club, where the finest duck-shooting is enjoyed; through many small towns and seacoast ports,—McClellanville, Georgetown, Conway, and across Carolina to Wilmington.

During the tourist season, probably the most popular run is to Magnolia-on-the-Ashley, usually called Magnolia Gardens, known to nearly all tourists in the South as the most unique and beautiful display of azaleas of every hue in America. The road to this place runs west from the city over the Ashley River bridge, following the river for about fourteen miles, passing the gates of many beautiful Winter homes, with their long straight avenues of moss-covered oaks. This is also a popular run to Summerville, being a more beautiful, though longer road than the official highway, making a circuit with the latter of about 52 miles.

Over this Ashley River road was held probably the first endurance run in the South, four years ago, to Summerville. The good results of this run are shown in the greatly improved condition of the road. In the city itself the attractive points both historic and modern are numerous enough to bring every year a constantly increasing number of visitors and tourists. Fort Sumter,



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road from Clearwater to Dunedin is probably the finest five miles of macadam in the State, and with but one sharp turn makes an ideal speedway. All the way the road runs parallel to the beach, not more than a hundred yards from the water. The gulf is always in plain sight beyond the keys that mark off Clearwater harbor.

The automobile owners of the city have formed the St. Petersburg and West Coast Automobile Club. By-laws have been adopted, and the following officers elected: Dr. F. W. Wilcox,

situated on a small island in the centre of the finest harbor along the coast, no doubt represents the most historic interest, while in the U. S. navy-yard on Cooper River, and the forts and batteries on the islands surrounding the harbor, the visitor sees the vast amount of attention Uncle Sam is giving to this city, showing its great importance.

Many beautiful old residences and churches offer to those interested, types of architecture and methods of building not seen anywhere else in America. Although the city has been through many misfortunes, due both to man and to nature, it still possesses fine examples of houses built from material brought from England before the American Revolution. The surrounding islands also offer many fine beaches for those fond of racing, the best example being the Isle of Palms with a ninemile beach fully equal to Ormond-Daytona. Two meets have been held on this beach, the times showing it to be very speedy.

The automobile situation is very good considering the reserved and conservative nature of the people who, though comparatively wealthy, are not ostentatious. Over two hundred cars have been sold and registered here, ninety per cent of this number in the last year and a half. Most of the machines are of the popular-priced touring variety, and there are no foreign cars at all. Four or five garages and repair shops represent the business end of the industry in motor cars—The Motor Supply Company, 161 Meeting street, Overland cars; The Urmy Cycle Mfg. Company, 130 Meeting street, Buick and E-M-F; the Automobile & Marine Motor Company, 249 Meeting street, Ford, Mitchell, Chalmers-Detroit; M. B. Paine, Sr., 47 Meeting street, White cars.

The recent forming of the Charleston Automobile Club promises to enliven the interest very much, and increase the number of cars used. The club is planning its initial run for Thanksgiving Day, probably to Summerville, to enjoy the cordial hospitality of the Pine Forest Inn, well known to all who tour through the South.

FLORIDA'S WEST COAST ON AUTO MAP

St. Petersburg, Fla., Nov. 20—The cities of this section of Florida have taken up the combined automobile-good roads movement with great enthusiasm, and are busily engaged in "discovering" each other by the newest form of transportation.

Last week a party composed of Ed. T. Lewis, with a Cadillac; Horace Williams, with an E.M.F., and Will Ramm, with a Mitchell, left this city bound for Clearwater. The St. Petersburg-Tampa road was followed until the macadam road from Clearwater to Green Springs was reached; then the three mamachines ran into Clearwater, and thence to Dunedin over the fine macadam road from Large to that city. The stretch of



president; Ed. T. Lewis, vice-president; A. W. Fisher, secretary; Horace Williams, treasurer. A board of governors was also chosen, consisting of George Presstman and Drs. Hume, Rouse, Turner and Brown. A committee headed by Mr. Lewis has conferred with the county commissioners in Tampa, and received much encouragement from their attitude re-

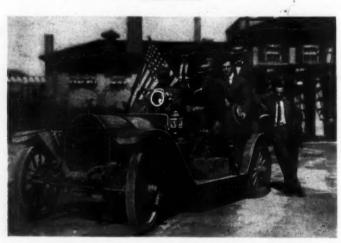


What the Clubs Are Doing These Days

BALTIMORE AERO CLUB AFFILIATED WITH AERO C. A.

Baltimore, Nov. 21—President Jerome H. Joyce, of the Aero Club of Baltimore, has received from the Aero Club of America articles of affiliation of the local club, together with a letter from the national body requesting that the papers, which were sent in duplicate, be signed and returned to the national body. These will be forwarded to New York within a few days by the local club and, with favorable action by the national organization, the Baltimore Club will have become an active factor in the International Aeronautic Federation.

Members of the Aero Club of Baltimore are hustling to raise the \$50,000 fund which this city is expected to contribute toward the project to bring the big international aviation meet in 1910 to some site between Baltimore and Washington. President Joyce has also appointed 48 additional members, all representative citizens of the city, of the local committee which is intrusted with the work of raising this guarantee fund.



When the Mitchell Ranger Visited Chicago Friends

With a cargo of newspaper men at the South Shore Country Club. Frank X. Zirbles at the wheel; Joseph E. G. Ryan ("Inter Ocean") and R. J. Finnegan ("Journal") on the fender; in tonneau, left to right, E. G. Westlake ("Evening Post"), Davis Rotroff ("Daily News") and J. C. Patterson ("Examiner"). Walter A. Birmingham ("Inter Ocean") is leaning against the car

PROMINENT BAY-STATER TO BECOME CALIFORNIAN

Boston, Nov. 20—A. E. Morrison was the guest of his motoring friends Thursday evening at a farewell banquet tendered him at the Bay State Automobile Association on the eve of his departure to make his home and engage in business in California. Mr. Morrison has been engaged in the trade in Boston almost since there was an automobile trade, being manager of the Peerless branch for several years, and afterwards agent for different cars. More recently he has been manager of the Taxi Service Company, of Boston. He goes to California to take up the management of the Studebaker Bros. branch in San Francisco. Until he was injured in a road race at Lowell several years ago Mr. Morrison was prominent as a race driver.

At the banquet James Fortescue, secretary of the club, presided, and J. W. Bowman of the local Stevens-Duryea agency presented to Mr. Morrison, in behalf of the Bay State Association members, a gold watch fob bearing the insignia of the club. C. J. Bailey presented to him a handsome diamond scarf pin. Other speakers included E. A. Gilmore of the Whitten-Gilmore Co.; J. W. Maguire, the Pierce agent; E. P. Webber of the Diamond tire branch; Kenneth Skinner and J. S. Hathaway of the White Co.

MILWAUKEE'S SHOW PLANS SPELL SUCCESS

MILWAUKEE, WIS., Nov. 22—The second annual Milwaukee motor show, to be held under auspices of the Milwaukee Automobile Club from Feb. 22 to 27, inclusive, will not be a "local" affair, but of national importance, if the flood of applications for space is to be taken as an indication of its extent.

President Clarke S. Drake, of the club, who is general manager of the show, says that plans are being considered to make the show a genuine "Motor show" in every sense. Motor boats and the like will be given full representation.

This plan is feasible this year through the use of the new \$500,000 Milwaukee Auditorium, covering an entire city block. There are four halls, in addition to the main hall covering a half block, each as large as the average theater. The main hall seats 8000 comfortably and the smaller halls 1500 each.

The accessory department will be one of the features of the show. Motors, engines and parts will be given adequate representation also.

CHRISTMAS DECORATIONS FOR COLUMBUS SHOW

COLUMBUS, O., Nov. 20—The committee of arrangements for the automobile show to be given December 25 to January I under the auspices of the Columbus Automobile Club, has arranged for the decorations to be white and green and to be in accordance with the Yuletide. All the decorations, including flags and bunting, will be fireproofed before placed in position, and in addition a squad of firemen will be detailed to watch the hall constantly.

The admission price has been reduced from 50 to 25 cents, and it is expected to have at least 60,000 visitors. Special rates will be given on all railroads for the occasion.

In all there is 14,451 square feet of space for the automobile exhibits and a large space for the accessories. It is stated that several of the automobile exhibits will be taken intact to the Grand Central Palace show in New York the following week.

LOUISVILLE HUNTING BUILDING FOR SHOW

LOUISVILLE, KY., Nov. 22—It is likely that Louisville will have an automobile show next Spring. Eugene Straus, President of the Louisville Automobile Club, is behind the movement and some definite action will probably be taken at the next meeting of the club. The armory, the largest building in Kentucky, is regarded as an ideal place for an automobile show, the structure covering an entire block. The basement could be used for accessory exhibits. Additional space here will allow twice the size of show held last year at the Coliseum building which was recently destroyed by fire.

A new home for the club is now practically assured, as the membership campaign was a success, seventy-five new members being added.

A. C. OF CINCINNATI'S SHOW, FEB. 21-26

CINCINNATI, O., Nov. 22—Under the auspices of the Automobile Club of Cincinnati, an automobile show will be held in Music Hall, the largest building suitable for the purpose in the city, February 21-26. No effort will be spared to make the show a pronounced success, and the club announces that any profit resulting from it will be expended in the interest of autoing and autoists in this section. Jesse Lippencott, whose headquarters are at the Gibson House, is at the head of the committee in charge of the exhibits, and any requests for information will receive his prompt attention. Although the date has just been announced, many firms have signified their intention of exhibiting.

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ROADS BUILDING NEWS

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INDIANA ROAD BONDS FOUND UNCONSTITUTIONAL

Indiana through a decision of the Indiana Supreme Court holding that all road laws providing for the payment of the construction of highways by bonds to be paid in turn by township taxation are unconstitutional. This decision was rendered last week, and practically all road building in the state has stopped, and there is considerable doubt as to the validity of millions of dollars worth of bonds that have been issued by townships.

For many years the method of road building followed in Indiana has been for the county to issue road improvement bonds, the county being reimbursed by a township tax levy. Thus all persons living in the township were taxed for the construction of a road in any part of the township.

This law has applied only to townships having incorporated towns of less than 30,000 inhabitants, and the Supreme Court holds that this makes the law class legislation, and, therefore, unconstitutional. The decision was reached on a case appealed from Hamilton County, where the Circuit Court refused to enjoin the county commissioners from ordering a road to be paid for by township taxation.

The only method of road building now left is to build it by direct assessment against all property within one mile of the road thus constructed.

KENTUCKY'S GOOD ROADS AMENDMENT?

LOUISVILLE, KY., Nov. 22—The South has without question a decided advantage over the North in the use of automobiles, owing to the fact that cars can be used the entire twelve months of the year, 'while in the North climatic conditions make this almost impossible. It is true that the roads in some seasons are in rather bad condition, but the whole South has waked up to the vital importance of good highways and atuomobiles as one of the most modern methods of increasing wealth.

The vote on the good roads amendment to the constitution of Kentucky was a disappointment to those interested in the betterment of the State's highways, and it is apparent that the apostles of good roads have much to do in the way of evangelization. There seems a slight chance that the amendment has been adopted, but if such proves the case, it will be by a close margin. The result will not be known until the official count has been completed. Should the amendment be carried, it is evident that a number of the counties will be slow to take advantage of its provisions. The small vote on the proposition in many counties and adverse majorities in others are due to popular indifference and to the widespread fear of "tinkering with the constitution." Some of the wealthiest and most progressive counties of the State voted overwhelmingly against the amendment. Other counties of which not so much was expected gave the proposition a surprisingly good support.

OHIO HIGHWAY DEPARTMENT TO ISSUE STATE MAP

COLUMBUS, O., Nov. 20—The Ohio State highway department will shortly issue a booklet containing a complete road map of the State by counties. The department has been busy on the work for months and assurances are given that it will be one of the most complete road maps ever worked up. Every turn in the road, bridge, railroad crossing and rough place in the road will be shown. It may be issued in colors later. This booklet and map will be of unusual interest, and great value to all automobilists obliged to travel by motor car through Ohio.

LANCASTER CLUB ATTACKS NEGLIGENT ROAD OFFICIALS

LANCASTER, PA., Nov. 20—The good roads committee of the Lancaster Automobile Club has filed exceptions to the reports of the road supervisors of Eden, Penn, Manheim and Lancaster townships, of Lancaster county. Several weeks ago Charles G. Baker, solicitor for the club, sent a circular letter to every road supervisor and every township constable in Lancaster county, calling their attention to certain Acts of Assembly relating to sign-boards and the removal of loose stones from roads.

The first of these acts provides that the supervisors shall cause posts to be erected at the intersection of all public roads in their respective townships, with boards affixed bearing an index hand and inscribed in legible characters with the name of the town to which the road leads, and the distance in miles; and also, that if any supervisor shall, after ten days' notice, fail to put up or put in repair such sign-boards, he shall be liable to a fine of \$20. The "loose stones act" provides that the supervisors shall have removed from the public roads all loose stones at least once a month during May, June, August and October. For failure to do this a fine of \$10 may be imposed.

After the warnings had been sent out the club committee had various members inspect the roads and report on them, witnesses being taken along to secure a perfect case. As a result of these investigations the club took the action stated above, filing exceptions to the returns of four of the forty townships. The matter will be taken up in the November term of the Quarter Sessions Court.



New Road Through Crawford Notch, in the White Mountains

WISCONSIN'S GOOD ROADS ENDEAVORS

MILWAUKEE, WIS., Nov. 22—M. C. Moore, of Milwaukee, president of the Wisconsin State Automobile Association, urged the employment of convict labor in highway improvement and good roads construction, at the session of the special Wisconsin legislative committee investigating the good roads problem, at Milwaukee. Several prominent owners claimed this system to be highly unsatisfactory and that it would add to the difficulties.

Chairman Jones, of the committee, closed a lengthy and excited discussion by saying: "Once you get this work started you will find plenty of men who will make it a business."

Townships in the vicinity of Fond du Lac and West Bend are taking the lead in erecting guide boards, as demanded by a law passed by the last legislature. These boards were to have been placed by November 1, but farmers claimed that harvest work halted them and they have asked for a little more time. In Fond du Lac and Washington counties, a new type of guide board and standard is being used. The post is a hollow steel pipe, set in concrete, with a special bracket at the top, with room for six signboards. The post is being used exclusively in these counties. It is cheap and will last a life-time.

OHIO COMMISSIONER FAVORS ROAD SYSTEM

COLUMBUS, O., Nov. 20—State Highway Commissioner J. C. Wonders will soon issue a booklet containing all the laws relating to highways and road improvement. The booklet will be issued to show every community in the state the method of securing appropriations for road improvement, and the laws that provide for their maintenance. The booklet will contain full explanation of the working of the designing board.

Commissioner Wonders, in a public statement, favors the adoption of a general plan of pike repairs and road maintenance modeled after the system in vogue in France, which, he says, is of the greatest efficiency of any in use in any part of the world. The Ohio General Assembly will be called upon to enact some law in that direction at its next session.

LONG ISLANDERS ANNOUNCE 1910 NOMINEES

BROOKLYN, N. Y., Nov. 24—The Long Island Automobile Club held its regular monthly meeting at the clubhouse, 920 Union street, Wednesday evening. The entertainment took the form of a beefsteak dinner. It was a busy evening, as the program following will indicate: Music and preliminaries at 6 p. m., meeting at 6:30, banquet at 7, presentation of silver cups at 8:15, addresses at 8:30 and advanced vaudeville at 9:15.

At the meeting, besides the regular business of the club, forty applications for membership were favorably acted upon, and the nominating committee reported nominations as follows:

For president, Allen C. Alderman; for vice-president, Louis T. Weiss; for treasurer, Charles C. Cluff (renominated); for secretary, C. Stewart Cavanagh; for governors (two years' term), Frank G. Webb, William Schimpf and Dr. C. B. Parker; for membership committee, J. Pell Disbrow and William M. Alford. No opposition nominations are expected. The election will take place at the annual meeting, to be held December 1. President Webb declined a re-election, stating that business duties made its acceptance impossible. Nominee Alderman has been a most prolific member-maker.

HISTORIC BUILDING BURNS IN DETROIT

Detroit, Nov. 22—The old Biddle House, in this city, which half a century ago was a notable hostelry, was burnt to the ground last week. The ground floor was occupied by a number of automobile concerns. The Firestone Tire Company lost about \$20,000, the Jackson Automobile Company \$2,500, the Republic Rubber Company \$2,000, the Detroit Tire & Repair Company \$1,000 and the Studebaker Automobile Company \$1,000. These losses were fully covered by insurance.

WINNERS OF SAVANNAH-ATLANTA RUN

SAVANNAH, GA., Nov. 21—The winners in the Savannah to Atlanta endurance run have been announced by Arthur W. Solomon, chairman of the technical committee.

It was found that in Class A, for cars listing at \$2,000 and over, Dr. Craig Barrow, driving a 24-horsepower Stevens-Duryea, had made the trip with a perfect score, which of course meant first prize.

In Class B it was harder to decide, and after going over the cars for the second time it was found that two were tied, these being a Crawford 30-horsepower, driven by W. C. Mahoney, and a Maxwell 30-horsepower, driven by Robert Brockett, Jr. The prize in this class will be divided.

Again in Class C the same trouble came over the technical examination as it did in Class B, and two cars were again declared tied, these being a Maxwell 10-horsepower, driven by E. G. Gager, and a Buick 22-horsepower, driven by E. A. Weil. The Maxwell in this class is the same car that made a perfect run from New York to Atlanta. The prizes in this class will be divided.

Next Run From Savannah to Jacksonville

It seems certain that the next run to be given by the Savannah Automobile Club will be to Jacksonville, Fla. If this run is arranged it will work out the last link to blaze the way in the New York to Jacksonville highway.

The run may be in the latter part of April or the first part of May. The distance is something like 162 miles, and can be easily made in nine hours, which, of course, would take less than a day. The entrants would be much more numerous than in the run to Atlanta, this because of the fact that concurrent with the Atlanta run, there were several other runs from Georgia cities. Entries would be received from all the cities along the road, and also from Jacksonville.

NEW BOOKS FOR AUTOMOBILISTS

"Sicily; the Garden of the Mediterranean"-Those modern gypsies, the automobilists, will find an inspiration in this latest volume from the press of L. C. Page & Company. Will S. Monroe, author of "Turkey and the Turks," and "In Viking Land," signs his name to this additional work of biography, as it were, of a land and its people. Mr. Monroe speaks interestingly of the history of Sicily, and of the origin, social conditions, religion, education, industries and art of its people. To each of the principal cities is devoted a chapter, not forgetting unfortunate Messina. Tourists will read with especial interest the chapter on "Hostelries, Brigandage and the Mafia." Hotel keepers appear to be of even a more predatory nature in Sicily than in other parts of the world, and their wiles are many and surprising-amusing, too, when one's self is not the victim. Brigandage, according to Mr. Monroe, has almost disappeared, and the Mafia is on the decline. The volume, printed on thick, tinted paper, is handsomely bound in cloth, and its 400 pages are enriched by innumerable full-page illustrations.

"Guatemala and Her People of To-Day"-Guatemala is virgin territory for the automobilist. Although comparatively near this country it is little heard of save when an occasional revolution finds a scant paragraph in the daily papers. "Guatemala and Her People of To-day," by Nevin O. Winter, is another of the publications of L. C. Page & Company, in its series of works on the various countries of the globe. Roads in this country of few accomplishments and great possibilities are in a most rudimentary condition; yet with development they must inevitably improve, and that time is not so far away. The awakening has already begun. Gautemala has extensive coffee plantations, and growths of rubber which might be developed to much profit, especially in view of the rising price of that article. Automobiles will no doubt play an important part in the future transportation systems of the country. This volume is a companion to the others of the Page series, and the typographical work is up to standard, illustrated with no less than 49 full-page plates. TRE
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HOLDS NEW JERSEY LAW IS CONSTITUTIONAL

TRENTON, N. J., Nov. 19-The Supreme Court, in an opinion by Justice Reed, has sustained the constitutionality of the Frelinghuysen automobile law. The law was attacked principally on the grounds that it was an improper interference with interstate commerce. The White Company of New York sent R. H. Johnston, its advertising manager, through the State in a machine loaded with parts intended for the Philadelphia branch, so that the car was directly engaged in interstate commerce. The driver of the car was arrested for failure to-comply with the provisions of the law.

The law was attacked on the following points:

First-The right of the State to license automobiles not according to true value, but according to the horsepower.

Second-Is this not a double tax, as the first tax is levied by taxing assessors?

Third-That the law puts automobiles in a special class for the nurpose of taxation.

Fourth-That this is a tax on interstate commerce in violation of the Federal Constitution.

Fifth-This tax is a violation of the fourteenth amendment of the Federal Constitution, and

Sixth-That the act discriminated against citizens of other States because it compels the designation of an agent upon whom process

may be served in this State. Justice Reed bases his decision on the police powers of the legislature. He says that the automobile is a dangerous machine, and that the first duty of the State is to protect the public from danger to life and limb. He further says that the so-called taxing of automobiles is really licensing, as properly called under the Frelinghuysen law, and therefore not unconstitutional. He denies that anyone has an inherent right to use the highways for automobile travel. The opinion may be summarized on the fol-

lowing points:

These provisions (license fees) are legitimate exercises of the police power of the State, notwithstanding the clause in the statute that requires all fees, fines and penalties arising under the act to be paid to the State Treasurer, and to be apportioned by the State Road Commissioners for the repair of improved roads.

If it was necessary to regard these provisions as an intentional legislative imposition of a tax for revenue, they yet would not be unconstitutional.

The provisions requiring each non-resident owner of an automobile to designate an agent in the State upon whom process may be served in any action against the owner growing out of the operation of his registered machine in this State is not unconstitutional. In view of the present need of a vigorous enforcement of these laws for the protection of all users of the highways, I am of the opinion that the condition imposed that a man who proposes to use our highways for motoring shall agree to submit himself to the courts of the State into which he comes is legal.

MARYLANDERS DRAFT PROPOSED AUTOMOBILE LAW

BALTIMORE, Nov. 21-Harmony was the keynote of the conference between the Maryland Automobile Commission, appointed by Governor Crothers to draft an automobile law for passage by the State Legislature, which convenes in January, and the Automobile Club of Maryland, at the club house last Wednesday evening. The long-sought compromise on the figures of taxation was made after a lengthy discussion, in which both members of the commission and the club participated. These are the rates decided upon:

For cars of 20 horsepower and under......\$6 For cars of over 20 horsepower and not more than 40...... 12

It was also decided to fix the salary for the proposed automobile commissioner at \$3,000 a year.

MASSACHUSETTS LAW OPERATIVE JANUARY I

Boston, Nov. 20-By the new automobile law passed by the Massachusetts Legislature last Spring, the Highway Commission is permitted to begin its preparations for reregistering cars and reissuing licenses the first of December of this year, though the bulk of the law does not go into effect until the first of January. The commission is taking advantage of this provision, and has so far progressed with its plans, that it expects to be able on the first of next month to send out the new application blanks for both registration certificates and licenses, and to issue number plates as fast as applications are received. The commission has made this early preparation because of the fact that the new law requires almost revolutionary changes in the methods heretofore pursued. Up to this time, from the passage of the first automobile law in 1903 all private operator's licenses have been perpetual. There have been issued 34,702 of these licenses and the new law annuls them all. How many there are in actual use the commission has no means whatever of telling, but it is confident that at least half of them will be renewed and perhaps the proportion will be even larger.

Aside from having to renew all the licenses of private operators, no mean task in itself, the commission has to reregister the cars. There are over 23,000 of them in the State and probably many thousands will be registered immediately, as their owners will want to use them all through the Winter. And they must be reregistered on the new horsepower basis with fees graded from \$5 to \$25. In addition there is a large number of motor cycles to

The commission has made a change in terminology. "Private operator" is now merely "operator," and "operator for hire" is 'chauffeur." No person under 16 years of age can receive an operator's license and no person under 18 years can receive a chauffeur's license. Persons to whom operator's licenses have been issued at any time during the past six years can obtain a new license under the renewal clause, paying 50 cents instead of \$2, the fee for a new license. The application blank for a license contains no less than sixteen questions to be answered under oath, including date of birth, color, sex, height, weight, color of hair and of eyes, experience in driving motor cars, criminal record so far as motor laws are concerned if any, habits as to use of intoxicating beverages, physical or mental infirmities and familiarity with the law of the road.

NEW LAW PROPOSED FOR BUCKEYE STATE

COLUMBUS, O., Nov. 20-A bill has been prepared by Representative Ritter, chairman of the finance committee of the Ohio House of Representatives, providing for graduated fees for the registering of automobiles in the Buckeye State. The bill, which will be introduced in the General Assembly early in the session in January next, provides for a tax of \$3 for all electric cars, \$5 for all gasoline and steam cars up to 20 horsepower, \$10 for all cars between 20 and 40 horsepower, and \$15 for all above 40 horsepower. Trucks will be charged \$5.

It is known that fully 25 bills will be thrown into the hopper early in the next session of the General Assembly, and the Ritter bill will probably be united upon by autoists to keep freak legislation from being placed on the statute books. The Ohio State Automobile department is of the opinion that the present law is sufficient. Mr. Ritter has come to the state department for suggestions, secured from experience.

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There is some doubt if a law providing for different fees, based on horsepower will withstand the tests of constitutionality in the courts. In the present law, which was carried through all the tribunals of the state, the fee was declared not a license but only the exercise of police powers. It may be that increased fees will be construed as licenses, which is contrary to the Ohio constitution.

CHICAGO CLUB IN VARIED LEGAL ACTIVITIES

CHICAGO, Nov. 20—Directors of the Chicago Automobile Club have gone on record as favoring the erection of permanent gates at draw-bridges, and have appointed a special committee, consisting of F. W. Blocki, Allen S. Ray and T. J. Hyman, to investigate the matter. Secretary C. A. McDonald, who is also the club's legal adviser, will then draft an ordinance which the club will present to the city council for adoption. One of the

features of this bill will be the suggestion that the gates be placed forty or fifty feet from the bridge.

Discussion of the tail-light law, which was scheduled for the meeting Thursday, was prevented by the fact that Secretary McDonald has been unable to find in the official reports of the council's proceedings any reference to the passage of such a measure, although it was reported in the daily papers.

More work was also given the legal-minded secretary in relation to the club's probe to find out what the various towns and villages in the vicinity of Chicago have done with the money collected from scorchers. This money is supposed to be spent on the improvement and repair of the highways. The club has been investigating this for some time, and has reason to believe that all the money has not followed the proper course. The city of Chicago reported that a considerable sum had been turned over to the park commissioners.

THE OHIO AUTOMOBILE LAW AND ITS WORKINGS

BY FRED. H. CALEY, STATE REGISTRAR OF AUTOMOBILES

WITH the advent of high-powered automobiles capable of being driven at a high rate of speed along the roads and highways of this State there arose the necessity of some method of regulating and identifying these motor vehicles. To that end the Ohio Legislature in 1908 enacted what is known as the Ohio Automobile Law, which becomes effective on June 10 of same year. It provides, in brief, that all motor vehicles shall be registered annually in the office of the Secretary of State by the filing of an application containing the correct name and address of the owner, and a detailed description of the car, together with a fee of \$5 for each steam and gasoline and \$3 for each electric automobile owned or hereafter acquired. The Secretary of State issues a certificate of registration or "license" card and two number plates bearing the distinctive number assigned to such motor vehicle which are to be conspicuously displayed, one in front and one in rear of the car.

The rates of speed at which motor vehicles may be legally operated are provided by the statute and each motor vehicle is required to be properly equipped with lights at night.

Under the provisions of this law as originally enacted all "licenses" continued in force for one year from date of issue. This considerable confusion and the last Legislature so involved amended the law that all certificates of registration now expire at the end of the calendar year for which they are issued. Certificates of registration issued in 1908 expire one year from date of issue and must them be renewed for the period from such date of expiration to January 1, 1910. The fee for registration cannot be pro rated for a part of a year, and certificates of registration and number plates are not transferable in any event, either from one automobile owner to another, or from one motor vehicle to another. An automobile owner is required to register each motor vehicle owned or acquired. An amendment to this statute will be offered when the Legislature convenes providing that in case of sale or transfer of ownership of a car the original owner may, if he immediately acquires another car, file a description of his new car in the office of the Secretary of State accompanied by a nominal fee of \$1 and be re-issued the same number and number plates for his new machine.

The net revenue acquired from these registrations is converted into the State Treasury monthly and maintained as a separate fund for the improvement, maintenance and repair of the public roads and highways in this State and is apportioned as the State Highway Fund is proportioned by law.

The paramount object of this statute, however, is to provide for the absolute identification of the owner and operator of every automobile driven upon the roads and highways of this State. A full and accurate list of all the ledger records of this department is furnished to the clerk of courts in each county of the State, and additional registrations are furnished monthly. This list contains the name of the owner and his address, his registration number and a detailed description of his car and is provided with a numeral and a name index alphabetically arranged. In case of an accident occurring in a remote part of the State it is not necessary to write to the Secretary of State to ascertain the name of the owner of any automobile, as this information can be procured at the office of any county clerk.

One of the most beneficial results of the State law to the automobilists has been the elimination of what was known as the "city

licenses." Heretofore each city in the State had a local license ordinance providing for the imposing of a fee of from \$1 to \$7.50 for a license on each automobile. The Supreme Court has recently decided that these city licenses are unconstitutional inasmuch as they conflict with the provisions of the State law.

Reciprocal relations have been entered into with the secretaries of States and automobile departments of other States, and Ohio "licenses" or number plates are now recognized in practically every State having automobile registration, with the exception of New Jersey and Maryland.

As a result of this statute there was converted into the State Treasury for the fiscal year ending November 15, 1908, the sum of \$46,000 in round numbers, being the net receipts for the first four months' operation of the law. The net receipts for the year ending November 15, 1909, will approximate nearly \$100,000.

By reason of letting all contracts for the furnishing of number plates and chauffeurs' badges by competitive bidding the expense of the department will be greatly reduced for the year 1910.

The department is conducted upon a strictly business basis, and we are endeavoring to insure a maximum amount of efficiency with a minimum amount of expense.

There are now registered in this department in round numbers twenty-three thousand owners, four thousand chauffeurs and about five hundred manufacturers and dealers.

The growth of the automobile industry during the past ten years is astounding. The city of Cleveland alone has nearly 5,000 machines, or nearly as many as in Toledo, Columbus, Dayton and Cincinnati combined. There are more automobiles in Columbus to-day than were operated in the entire United States eleven years ago. It is estimated that the total number of machines in the United States in 1898 was less than 1,200. Now there are over 180,000, and the manufacturers' associations estimate that during the year 1910 there will be made and put upon the market over 200,000 new cars, or 20,000 more than the entire output of all the factories in the country during the past ten years.

There is probably no class of citizens who are more intensely interested in good roads and who suffer more inconvenience from bad ones than the automobilists of this State.

A number of eminent slik hatted, faultlessly attired gentlemen have met from year to year in a so-called good roads convention. They have "resolved" and "resoluted" by endorsing various methods of road building and have made two-hour speeches in which everybody was urged to "co-operate" with everybody else, but the automobilists of the State have waited in vain, until now, to see the man with the shovel.

This convention, I take it, gentlemen, is a convention of actual road builders. You are not here for the purpose of passing compliments, or listening to platitudes, but to devise ways and means for improving the highways of this and every other State in the United States in the best and most ecenomical manner, and to that purpose the automobilists of Ohio, who are 25,000 in number this year and will be 40,000 next year, are ready to assist you. The automobile owners of Ohio do not object to paying a registration fee, but they insist that the revenue derived shall be devoted to this purpose. What we need, however, is not so much of an appropriation of revenue as an appropriation of brains. If we can convince the members of the Legislatures of the various States that the money appropriated for road purposes will be properly and judiciously expended there will be no trouble about ready money forthcoming to carry on the work.

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THEORY AND WORKING OF THE
THERMOSYPHON

By D. Siebenmann, M.E.

WITH reference to no other part of the modern automobile does there appear to be such an erroneous impression prevalent as with regard to the working of the thermosyphon system of circulation. Before taking up the subject, I must first refer to a scientific discussion regarding the need for the characteristic broad return pipe in order to create a great amount of

space for the return flow, that has been dwelt upon by a well-known expert.

There are so many different parts of wholly variant nature to be designed and allowed for in the construction of an automobile, that it is quite conceivable errors may be made in the above form, and that without in any way reflecting upon the designer. Then woe to the builder-as in the automobile industry, unfortunately, it is at his door that failures are commonly laid - if he adopts something the operation of which is not entirely clear to him. The responsibility for numer-

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Fig. 1—Test tube, filled with water, showing flame from Bunsen burner playing against same

ous failures is due to the fact that the particular construction has been adopted without a sufficiently detailed investigation, its merits have been passed upon purely from surface indications of value, and this is especially the case where the thermosyphon is concerned. It just so happens that articles on this subject have fallen far short of covering it completely.

Data Throws Light on Former Unsatisfactory Results—The following, which consists of data compiled by the well-known firm of Renault Frères, serves to throw light on a number of things, and above all on the errors in the relation of the parts peculiar to this type of cooling system. At the outset, the results obtained were most unsatisfactory, and the conclusion was accordingly reached that sufficient cooling was not obtainable in this manner and this system was not available for use on the automobile. But this was entirely erroneous. By properly calculating the size of the various parts, taking into consideration all the necessary factors, which are now well known, any cooling effect desired is obtained.

In a definition of the term "thermosyphon" we have an expression that is about as far from being indicative of its real nature, as are many others to be found in automobile terminology. A much better term would be "heat-circulating." The word indicates that under the influence of heat, a circulation is set up, and it is quite apparent that heat is the moving force acting on the water. Experiments have shown the causes of this movement to be as follows: See Fig. 1. G, is a U-shaped test tube, the legs of which, cd, are filled with water; f is a Bunsen burner, the flame of which is directed against the leg d. The flame is allowed to play against this part of the glass until a definite

relation of the surface of the water in this leg of the tube is established with regard to its loss in weight.

This will continue at the expense of the density of the water until a so-called thermal column of the height of h will be raised. The two legs d and c may then be joined at the height of h by a tube, so that the level will be restored, both columns then having the same weight, which will set up a circulation of the water. Here, then, is an explanation of the principle involved. showing the reason for the circulation. The driving power of the latter is indicated by the thermal expansion of the column, and the greater this driving power, the more lightly is the density relation between the cold and warm columns of water defined. This power must overcome the friction of the water against the tube, cooling effect of the walls, changes in direction, contraction, and like factors of resistance opposed to the circulation. The value of these factors may be ascertained accurately and in such a manner that they may be brought into definite relation with one another and a positive circulation established, so that the details of a thermosyphon system may easily be planned ahead. These being known, a typical example may be constructed. Fig. 2 is a graphic representation of such a cooling system.

Some Theoretical Considerations—M indicates the motor, L the return tube, K the radiator and m m the center or dividing lines of the hot and cold zones of the motor and radiator, b representing the vertical distance between the two. It follows then that:

W volume warm water delivered.

- d inside diameter of
- t₁ temperature of out-
- t₂ temperature of returning water.
- γ₁ density of outgoing water
- γ₂ density of returning water.
- g acceleration of the drop = 9.81 m/sec.
- l length of the tube
- ρ coefficient of fric-
- & coefficient of resist-
- v speed of the circulation.

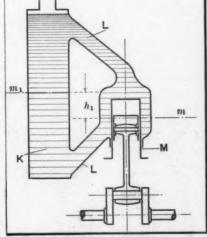


Fig. 2—Typical example of thermosyphon cooling system

The equation for W is then as follows: (Rietschel, Sanitary Heating, 1891; Birlo, do., 1891).

(1)
$$W = \frac{d^2\pi}{4} \times \nu \frac{\gamma_1 - \gamma_2}{2} (t_1 - t_2) \times 1000 \times 3600.$$

While the number of heat units per hour and the speed of circulation necessary are derived from the following formula:

(2)
$$v = \frac{W}{10000} \times \frac{1}{275.65 d^2 (t_1 - t_2)} \text{ m/sec.}$$

^{*}Translation from the German of "Der Allgemeine Automobil Zeitung," by Charles B. Hayward.

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W is known in each case, but d and v must be taken for the master formula (3) which will give the attainable speed of flow.

(3)
$$h_1(\gamma_2-\gamma_1) \geq \frac{v^2}{2q} \times \frac{\gamma_1+\gamma_2}{2} \times \left(l \times \frac{\rho}{d} \Sigma(\xi)\right).$$

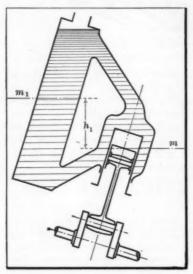


Fig. 3—Showing inclination of thermosyphon system mounting a 20 per cent. grade

2. Decrease of section (obstruction)

This formula will be found to produce substantially different results, so that the operation should be repeated, taking a different value for d. In no case should the product of the right member exceed that of the left.

Coefficients of Resistance the Same as Air.—
The coefficients of resistance are approximately those established for the movement of air, the principal ones with which we are concerned in the present case being as follows (Rietschel's Manual, 1894):

1. Increase of section

$$1 - \left(\frac{f}{c^3 f_1}\right)^2$$

4. Contraction, with enlarged inlet
$$0.5 - \sim 0.2$$
 (c = 0.90)

$$c = \text{linear contraction coefficient.}$$

f = cross-section of tube.

The friction coefficient is, according to Weisbach:

(4)
$$\rho = 0.01439 - \frac{0.0094711}{\sqrt{n}}$$

and the volume and degree of density of the water in a temperature range from 0 to 100 deg. C. is as follows:

Tempera- ture C	Volume	Weight Kilos	Tempera- ture C	Volume	Weight Klios
0	1.000117	0.99988	50	1.01196	0.98818
4	1.000000	1.00000	55	1.01434	0.98587
5	1.000008	0.99999	60	1.01692	0.98336
10	1.000264	0.99974	65	1.01961	0.98077
15	1.000852	0.99915	70	1.02263	0.97787
20	1.001741	0.99826	75	1.02572	0.97492
25	1.002897	0.99711	80	1.02891	0.97190
30	1.004300	0.99572	85	1.03222	0.96879
35	1.00582	0.99421	90	1.03571	0.96552
40	1.00771	0.99235	95	1.03933	0.96216
45	1.00981	0.99029	100	1.04312	0.95867

It may seem that this method of calculation is somewhat rambling and lengthy, but it is, however, the shortest way of solving the problem. It would be more complicated if the amount of cooling surface necessary for various pipes were taken. Then it would be necessary to outline a formula for the maximum speed of flow in each different conductor. Thus:

(5)
$$\frac{\gamma^3 - \gamma^1}{\gamma^1 + \gamma^2} = a$$

and the formula for any particular stretch of conductor n, would be as follows:

(6)
$$a \times h_1 = \frac{v_{n^2}}{2g} \left(l_n \frac{\rho}{d} + (\Sigma \xi) \right) + \frac{v_{n_1}^2}{2g} \left(l_{n_1} \frac{\rho}{d} + (\Sigma \xi) \right) \text{ etc.}$$

For a predetermined temperature drop and cross-section of conductor, we may obtain constants from formula No. 2, which will serve to greatly simplify the calculations.

What Influence the Height H Has—The importance of the factor h_1 , representing the vertical distance between the center lines of cold and warm zones, is very evident in the different formulæ. Were this equal to zero, or even negative, a circulation would naturally be out of the question, and the higher the cool body of water is placed over the hot, the greater will be the driving force, and, in consequence, the speed of the circulation. But the vertical distance h_1 , separating the two levels, as it appears in Fig. 2, can hardly be accepted as a fixed relation, particularly where the conditions were not favorable. It must not be forgotten that we are not dealing with a stationary installation, and that even in traveling over good roads, the rising and falling would be such that the relation of the two would be continually changing, now above and again below.

Assume, for instance, that the automobile of which the cooling system illustrated by Fig. 2 forms a part, is mounting a 20 per cent. grade, which gives us Fig. 3, and in which it will be evident that the relation has been altered in such a manner as to make it much more favorable for rapid circulation of the cooling water. The distance h_1 has been increased substantially and with it the driving power of the circulation. This is a prominent and peculiar characteristic of the thermosyphon system that makes it particularly advantageous for automobile work, for the motor runs much hotter in hill-climbing and the intensity of the water circulation is increased to correspond. Naturally, the relation taken in the foregoing formulæ is that which obtains in ordinary running and is based on the minimum amount of cooling necessary under such circumstances.

Form of Cooling Used by Leading French Firms—Another example of this type of cooling system is shown in Fig. 4, which illustrates its arrangement as applied to the Renault cars, on which the radiator is placed behind the motor in order to obtain a relation between the hot and cold levels that will insure a strong circulation. It will be evident that here also the unfavorable conditions brought about in hill-climbing have been taken into consideration. In view of the insignificant amount of driving power available, it is marvelous that even a minimum speed of flow should be produced. To put this on a basis where its regulation will be absolutely certain and always

bear a constant refation to the working of the motor, the complete temperature should range be worked out. For a system with a total height of 0.3 meter for hi, and a temperature drop of from 90 to 40 deg. C., the driving power is obtainable from the following:

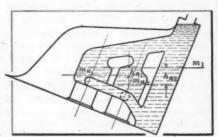


Fig. 4—Form of cooling system used in leading French cars, notably the Renault

(7) Total:
$$a \times h_1 = \frac{0.99235 - 0.96552}{0.96552 + 0.99235} \times 0.30 = 0.00725 \text{ m.}$$

So that under unfavorable conditions, such as mountain climbing, as shown by Fig. 3, there would be a head corresponding to the pressure of a water column of 7.25 mm.

Careful attention should be devoted to the laying out of the conductors—the greater the diameter, the less the resistance and,

consequently, the greater the speed of flow. It is seldom possible to make the latter exceed .03 meter per second, even with conductors of large diameter, for if the change naturally took place more rapidly and the difference in density were eliminated, the temperature drop would be insignificant.

Another Point of Vital Importance.—There still remains an item of importance to be taken into consideration; an excessive amount of space must not be allowed between the sections or tubes of the radiator. While the friction will be insignificant where tubes of literal cross-section are adopted, as recommended, on the other hand, it must also be considered that the heat-conductivity of water is slight (0.51 according to H. F. Weber) and that if the interior arrangement is not such as to insure a quick and steady movement, light counter-currents will be set up with detrimental results to the cooling.

Consideration should therefore be given to the question as to which of the two most essential cooling appliances is the most suitable, in order that it may be definitely determined. In general, however, it may be maintained that from the standpoint of efficiency and simplicity, it is difficult to render definite and decisive judgment as to the superiority of either the thermosyphon, or the pump circulation system of cooling, except insofar as the omission of the pump makes a logical conclusion inevitable. Then there is the greater certainty of operation, the far simpler arrangement, and the decreased danger of freezing to be mentioned. It will be apparent from the foregoing that for the thermosyphon system, as opposed to pump circulation, all radia-

tors are not well adapted, so that the latter has an advantage and that is the slight temperature drop.

Provided that the pump exerts a strong and constant suction, the average temperature of the water will be considerably higher, owing to the increased speed. It follows, therefore, that there is a greater delivery of heat per unit of surface, and this is an advantage in which the thermosyphon is lacking. For the same thermal efficiency, the radiator employed with the thermosyphon system must also be larger. How much larger still remains to be definitely determined. Only the investigations of Péclet give any data on this point. However, there exist authentic data on the coefficients of heat dissipation for arbitrary speeds of flow of the cooling fluid under such conditions, although the automobile industry does not appear to have taken advantage of this information as yet. We have simply established the rule according to which the speed of heat-dissipation through a wall is governed, and that the resistance of a body of water to undergo a drop in temperature is inversely proportional to the strength of its movement. Investigations are now being carried on with a view to the further development of the thermosyphon system of cooling, and particularly as a means of trying to overcome the disadvantages mentioned above, but the present status of the experimental work does not permit of publication of the results, as yet. The thermosyphon system is largely in the minority, so far as its present use is concerned, but it is certain that its application will ultimately be general and then the causes referred to will have been overcome.

A STORY OF THRIFT AND AN AUTOMOBILE

By H. L. W.

L ESS than fifteen years ago two very young people in a mid-Western State were married. Their possessions were a sewing machine, a few yards of new rag carpet, a few dishes, a little bedding and a few pieces of old furniture. They had little or no money.

The first few months were spent on a farm as tenants where they had a house, rent free, and a garden plot and could keep a few chickens. Both were frugal and had no bad habits, and added a little to their goods. Then the man took a position at \$40 per month as clerk for a grocery firm in X——, a town of 8,000 or more population.

The wife did all her own house-work and sewing. Having a good eye for a bargain, and quick to see the possibilities of remnants, she dressed on almost nothing. She was also a good cook. In the fruit season her husband on Saturday nights obtained, for very little, fruit that the firm would not risk keeping over Sunday. This she put up for winter, thus securing enough for their use at a merely nominal cost. A baby came before the end of their first year, adding to their expenses.

After a year or two with this grocery firm the man found a similar position in a larger town. This store did a big business and he soon became in fact, if not in name, manager, though his salary attained only \$60. The close confinement affected his health and after a year or two he returned to X——, where he obtained a position as traveling salesman for a wholesale grocery house. He speedily rose to be one of its few best salesmen. His wife still did most of her work and sewing, although the children now numbered two.

While working for this firm he invested his savings in a lot and built a house, borrowing from a building and loan association. This debt was discharged rapidly and they were the proud possessors of a comfortable modern house with a fine lot.

Manufacturers, to push their goods, offer premiums (of cash sometimes, but more frequently of silverware, articles of furniture, etc.) to the salesman traveling for houses buying from them. The man did so well that their house was largely furnished by his premiums, among them being one or two musical instruments and a phonograph. In this way in time he secured

two or three phonographs with nickel-in-the-slot attachments. These he put up in railroad stations on his route, paying, of course, a percentage for the privilege. These machines, each, brought in several dollars monthly.

In time his house proposed to give him a certain sum in cash yearly in place of settling his expense account. He took the offer, bought an automobile, using it as far as possible to make his trips, and nearly paid for it with what it saved for him the first year. There were, of course, some places that he still had to make by train all the time, and others that had to be reached thus when roads or weather made the automobile impossible.

He had an inherited bent for mechanics and was soon selling automobiles as a side line, his wife attending to this business for him in his absence. This trade grew rapidly till the machines came in by the car load. They were sold on commission, which was clear profit, as they were delivered on arrival, and so no expense for store-room was incurred.

Convinced there was more money in the automobile business than in groceries, he resigned his position and removed to a town farther west. Here he started a garage and repair shop, and bought and sold machines. He now owns considerable real estate and is sole owner of his business. On an invested capital of \$10,000 he recently cleared in one year \$9,000 above all expenses, including living.

His wife has been of great assistance, keeping books for him and running the business in his frequent absences. To do this, she has employed a competent housekeeper, wisely considering her time worth more in the office than in doing housework. This does not mean that the home or the children have been neglected. Two better behaved children it would be hard to find. Nor does it mean a total sacrifice of self. She has found time to study and take lessons in subjects which her limited advantages in girl-hood prevented her acquiring before marriage.

These young people—neither is yet forty—have not denied their children or themselves reasonable pleasures. In later years they have traveled considerably. But from 'he first, they have kept well within their income and have watched for opportuni-which no one can justly say is not rightfully theirs.

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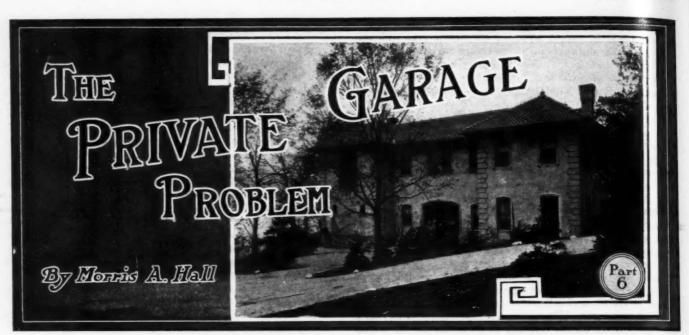
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Large Ornamental Cement Private Garage and Stable at Yonkers, Overlooking the Beautiful Hudson River

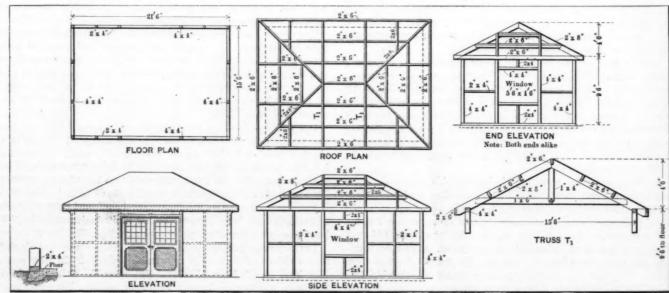
CONTINUING our concrete and cement story from last week, a number of garages of larger size will be given. In these, while no attempt has been made to produce great architectural beauty, the designs and actual work of construction show considerably more scope and, therefore, require somewhat different treatment from those previously given.

While the small house built by the man of modest means and for that reason, very simple, is by far the most interesting, the larger buildings represent more thought and may not be as lightly dismissed. For one thing, the larger sizes mean longer walls, and larger unsupported walls and roofs. This necessitates considerably heavier iron for the reinforcing and more of it, when the reinforced form of concrete is used. And when it is not used, this means much heavier walls; that is, walls of a much greater thickness. The reinforced form, too, will have greater thicknesses of concrete.

In the larger sizes, the roof design is easily the biggest problem, for it is desirable to have an unobstructed floor—that is, without posts. Now the bending moment at the middle, the point of greatest strain, varies as the linear width, but as the cube of the thickness of the supporting member. So, if the width is doubled, the thickness is multiplied by 9. This would lead to some unusual thicknesses, so that the strength is increased by more internal reinforcement, rather than simply increasing the thickness of the material.

Another problem enters as soon as the number of cars to be housed passes one, and that is the matter of maneuvering space. With a single car, the shifting around may be done outside and the movement within restricted to a simple in and out motion. With two cars, this same thing does not hold, for there will be the pit, cutting into the available floor space. This, too, must be considered in such a situation as: one car properly placed, and another coming in, with a necessity for the use of the pit. In that way, the two-car garage must allow for about three cars; that is, space for each of the cars and additional space large enough to allow either one to go to the pit without disturbing the other or moving it.

Larger Number of Cars Introduces More Difficulties—With additional cars this trouble becomes even more pronounced, thus with three cars there must be room for each one, plus sufficient space to allow any one of the three to go to the pit and return to its place without disturbing either of the others. This would



Complete Plans of Commodious, Medium-Sized, One-Car Garage to Be Built in Concrete on Metal Lath

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figure out to about floor space for five cars. This argument does not apply, however, to the public garage, since there every inch of space must be utilized at times, while at other times there is room for many more cars than are in the place. The writer has seen a dozen moved to bring one to the pit, this sounding like waste labor. It is, but labor is sometimes cheaper than space.

At the head of this article is to be noticed an excellent example of the private garage. This is not only a model garage, but, considered from an esthetic standpoint, has what many garages, even very large ones located on big estates, lack, namely, some architectural adornment. This garage shows, too, very plainly the tendency of the wealthy man not to tie himself up to any one method of transportation, provision being made under the one roof both for several large touring cars and runabouts, as well as several fine horses. This division of space really makes the building a combination barn-garage, but the features of building construction most suitable to the automobile are also very necessary to the up-to-date stable.

It might be mentioned in passing that this garage is located at Yonkers, but a few miles north of the New York City line on the direct road into the city. The owner, Rudolph Oesler, has several cars, a big Benz seven-passenger touring car and a runabout. The building is really in two parts, the lower for the cars and horses; the upper, living rooms for the coachman-chauffeur and his family. The convenience of the latter has been considered in more ways than one. Thus, the back side of the building, the one opposite to 'hat shown, carries on the second floor level, a very large roomy porch, roofed over against inclement weather. On this, the employees may spend many a pleasant hour sitting in the shade (this being on the north side) and overlooking the Hudson River at their left and the main road north and south between New York and Albany at the right-hand side.

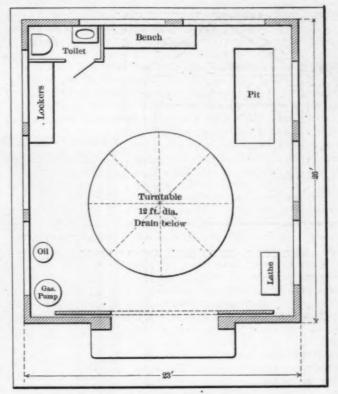
Like the building itself, the floors are of concrete, with a wash rack occupying the center of the large floor space. The projection on the right houses the harness-room and the door shown leads into the oil and gasoline storage-room. The whole left wing nearest the Hudson, which may be dimly seen in the distance, is given over to the horses. The automobiles, on the other hand, have the whole central portion and the back part of the right wing, behind the oil and harness-rooms. This gives an ell-shaped space about 25 feet by 30 feet long dimensions.

Another One-Car Cement Garage Plan—Before finishing up the story of cement in its relations to the small concrete garage, it will be advantageous to give another set of plans from which the amateur owner may, if he wishes, construct his own motor house. These are given on the previous page and show a more ornamental job than the one previously given for a single car. The shape is more nearly square, greater space being left along what would be the back side for closets, shelves and cupboards.

Being intended, like the other, for the use of concrete or cement

plaster over a metal-lath, Hy-Rib or some other similar product, the walls are of wooden beams; mostly 2 by 4 and 4 by 4's. The roof, on the other hand—it runs up to a point, different from the others—is framed up in 2 by 6 and 2 by 8 timber, with a few cross-beams of 1 by 6 and verticals of 1 by 4.

Provision is made for three large windows, one in each end and one in the middle of the back opposite to the large, double sliding or hinged doors. As the floor plan shows, the space allowed for the car is very liberal, being 15 feet by 21 feet inside. This garage, like the previous small one, is intended, was designed, in fact, for the use of cement, and in order to use wood, corrugated iron, sheet steel, or other sheeting on the outside in place



Suggestion for Large and Well-Equipped Garage

of cement, would require some small alternations. The bill of material and estimate of cost on this house, using the wooden framework shown and cement, as described, is as follows:

Bill of Material and Estimate-One-Car Garage

Frame—Sides, 4 x 4, 229 lin. ft.
2 x 4, 169 lin. ft.

Roof, 2 x 6, 228 lin. ft.
2 x 8, 40 lin. ft.
1 x 6, 46 lin. ft.
1 x 4, 8 lin. ft.
1 x 4, 8 lin. ft.
1 x 4, 8 lin. ft.
2 x 4, 169 lin. ft.
2 x 5, 40 lin. ft.
3 x 6, 46 lin. ft.
3 x 6, 40 l

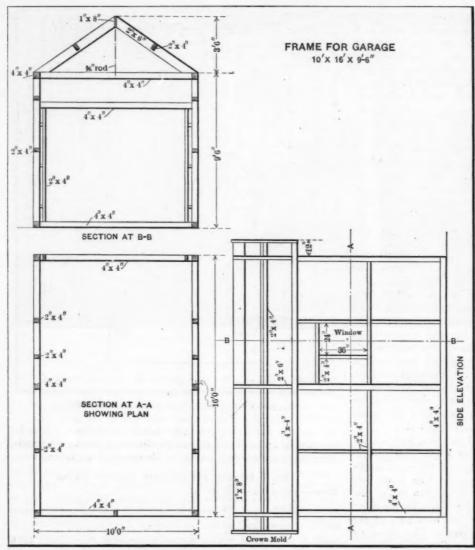


Cement Garage and Stable of the Noted Horseman, C. K. G. Billings

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Another Cement-Plastered One-Car Design, But Slightly Smaller

Even if the omitted quantities be taken at twice the others, this makes the whole garage come to but \$302, which is certainly very cheap for an all-cement garage of this size.

Turntable Really Enlarges Floor Space—As previously discussed, the maneuvering space needed when more than two cars are housed, is very considerable. In this connection the turntable forms a very useful adjunct of the modern large garage, for it economizes on the floor space. That is to say, having a turntable in the center of the floor does not cut out any of the floor space as a pit does. On the other hand, it allows swinging cars around within its own narrow confines and with absolutely no maneuvering other than a straight ahead run onto the turntable and another similar run off of it.

Aside from the big house, where it saves space, and thus first cost, it is of great and daily use in the small well-equipped house, where it saves much work, either of pushing the car by brute strength, or by carrying in fuel, starting a cold engine, and then backing and filling until the required location is obtained. On the previous page is shown a design for a small garage in which this feature is included. The outside width of 23 feet is like the length of 26 feet, ample. Although large, considered in the abstract, it is not any too large when the projected pit, lathe space, oil and gas pump space, lockers, bench, and toilet are all taken into account. Sliding doors are figured upon as economical of space and more handy to open and close than the hinged variety.

Noted Horseman's Big Concrete Garage and Stable—No one would expect as enthusiastic a horseman as C. K. G. Billings,

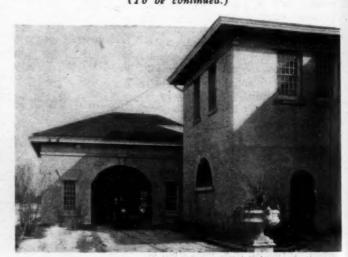
the owner of Lou Dillon, 1:58 1-2, the holder of many world's records. and of numerous other fast horses, to have a very large garage. as a matter of fact, his large combined stable-garage, located at Fort Tyron, One Hundred and Ninety-sixth street and Fort Washington road, New York City, as shown at the bottom of the preceding page, not only has not given over all of its spacious interior to the horses, but nearly one-half of the building is devoted to automobiles, the list of six or seven machines owned including all of the world's most famous makes.

This building forms an excellent example of what may be done in a very large building with concrete, being at the same time a most excellent design from the utility point of view and a very nice appearing place architecturally, although it probably would not be designated as beautiful.

Elsewhere is shown another plan for a small garage in cement of the same type and general description as the one for which the bill of material has just been given. Lack of space prevents giving the same for this structure, but it may be summarized. The total estimated cost, with lumber at \$25 per thousand, and labor at \$3.50 per day, exclusive of the same two items as before, is \$79.30, which, adding twice as much for the omitted items, would make the whole cost about \$240. The economy of reducing the floor space by 54 per cent is thus summed up in actual dollars, although this design is somewhat less elaborate, which doubtless had some little infiuence upon the total estimated cost.

Playing so large a part in modern society, the automobile should be considered in the construction of a house. Then, too, in the general scheme, the advantage of knowing this, locating it, and figuring on it prevents marring an elaborate arrangement as might be done otherwise. On this page are a garage and the corner of a very elaborate residence. This is one of the show places of Long Island, Italian villa style. An ugly garage would spoil it.

(To be continued.)



Garage Built to Complement Fine Concrete Residence

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DETACHABLE WHEELS POPULAR IN OREAT BRITAIN

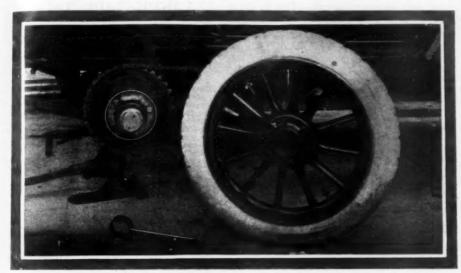
COVENTRY, ENG., Oct. 12—A new detachable wheel possessing special features of merit has just been brought out by the Dunlop Tire Company and will be shown at the Olympia exhibition next month. The special advantage of this design is that any looseness or side play can be taken up immediately by

slightly off the inner hub in order to make the wheel screw fully on the outside of it.

Any locking device is really unnecessary, but to prevent any possibility of the wheels being removed by some unauthorized person with an ordinary spanner, a ratchet and pawl device is

fitted in the hub so that the sleeve cannot be turned to unscrew the wheel unless the special spanner is used. This wheel is supplied both in the wire and in the wooden artillery forms.

Wheels of this type have become extremely popular in England, and even the little two-seater is rarely seen on the highways without some device of the sort on its running board or rear body. They are also much used in racing, as it is said that they can be changed even more quickly than the demountable rim, which has its chief popularity on the Continent. The detachable wheel, in fact, is a strictly British development. It was over its use, it will be remembered, that S. F. Edge had his famous quarrel with the French racing commission at the time of the last Grand Prix, which resulted in the withdrawal of the Napier team from the event. The subsequent slaughter of vari-

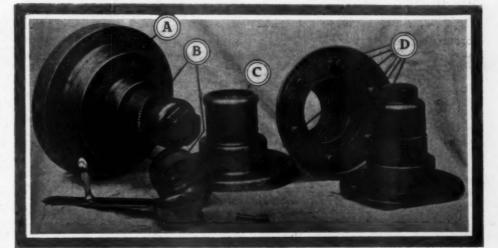


Showing New Dunlop Detachable Wheel Ready to Place On Hub

screwing the actuating sleeve further out, whereas with most other types of detachable wheels such looseness cannot be cured once it has been set up. Briefly described, the device works on the simple principle of placing a doubly screwed sleeve between the internal hub, which has a left-hand thread, and the outer hub shell, which has a much coarser lefthand thread. Consequently, when the sleeve is turned in a right-hand direction by means of the spanner, it unscrews somewhat off the inner hub, and this action causes the wheel proper to be screwed up tight against the flange of the inner hub. The wheel is prevented from revolving during this operation by the studs which fit into holes in the inner hub flange.

The action will be easily understood by reference to the accom-

panying illustration, the main points being that both the inner and outer threads are left-handed, and that the outer thread is of a very coarse pitch, so that the sleeve need only be unscrewed



Dunlop Detachable Wheel Hub Dissembled, Showing the Parts

(A) Inner hub. (B) Actuating sleeve, screwed on left hand on inner hub (fine thread). (C) Outer hub, screwed with coarse left-hand thread, to engage with sleeve. (D) Driving keys.

ous demountable rims, which put half the cars out of the running, seems to have justified his action. At any rate, the average Englishman firmly believes in his detachable wheel.

MICHIGAN'S AUTO-MAKING STATISTICS

Lansing, Mich., Nov. 22—That there has been a great growth during the present year in the automobile industry in Michigan is shown by the report of the Secretary of State, which shows that from January 1 to November 15, the present year, 34 companies for the manufacture of automobiles were organized in Michigan, representing a capitalization of \$15,423,000. The amount of capital stock of the various concerns ranges from \$5,000 to \$10,000,000, the latter figure being the capital stock of the Packard Company of Detroit. In addition to this 54 companies were organized for the manufacture of automobile parts.

NEW SPEED HONORS FOR THE KISSEL KAR

In the recent Phoenix (Arizona) 50-mile derby, which was run November 12, and in which a new Pacific Coast record was made for the distance, the performance of the Kissel-Kar, a car of medium price, was an unusually meritorious one. This six-cylinder machine was the only competitor of an imported car of three times its price, but upheld the American end in valiant style. The winning Isotta-Fraschini finished in 52:45, which averaged practically 57 miles per hour. Back of this but 28 seconds, the showing of the Wisconsin-built car was gratifying to its friends.

HOW TO BUILD A RACER

Editor THE AUTOMOBILE:

Editor THE AUTOMOBILE:

[2,093]—Through the columns of your magazine will you kindly answer the following questions: Is there any concern that makes all of the car ready to run with the exception of engine and transmission; that is, frame, running gear, shaft drive, front and rear axles, steering gear, etc.? I want a car to have a 20 to 25 horsepower engine, with all of the parts strong enough for this purpose, and once read of a concern in this business, but have forgotten the name. I do not refer to the 15 horsepower Metz plan car, as I want a miniature racer.

Middletown, N. Y.

Middletown, N. Y.

There are several concerns known to be doing just this kind of a business, although all of them will also sell you the engine and the transmission if you wish. A number of other firms make and sell about all of the parts which would be necessary but do not advertise to sell them assembled as you seem to wish. As to the former, you may try the following firms:

Borbein Auto Company, Ninth street, St.

Dart Manufacturing Company, Chase street, Anderson, Ind.

Elwell-Parker Electric Company, Cleve-

Franklin Machine Company, Franklin avenue, Brooklyn.

Neustadt Auto & Supply Company, Olive street, St. Louis.

The third of these, as you will note from the name of the firm, builds chassis ready for an electric power plant, but it is included in the list because the firm would doubtless be able to supply you with a frame which would fill your wants.

In the second class of parts makers manufacturing all of the necessary parts but not assembling them to sell as a whole, a list is also given. It is urged in favor of this method, that, as long as you expect to put in the engine and transmission yourself, you might as well assemble the whole machine and save the cost of that work. In addition, this method will render you more familiar with the component parts and their peculiarities. The list follows:

Auto Parts Mfg. Co., Muncie, Ind. Continental Engine Company, S. Canal

street, Chicago.

Elyria Machine Parts Company, Elyria, Ohio

Garford Company, Elyria, O.

General Mfg. Co., Richmond street, Elkhart. Ind.

High Wheel Auto Parts Company, Muncie, Ind.

Indiana Auto Parts Company, Marion, Ind.

Long Arm System Company, Cleveland. McCue Company, Hartford, Conn.

A. O. Smith Company, Clinton street, Milwaukee, Wis.

From this list you should be able to get a firm which will be able to fit you up with all of the required parts. In buying these parts, if, as you say, you want a sort of racer or very fast car, you must bear in mind that racing or fast driving sets up many unusual strains, and you should se-



lect your parts accordingly. That is, either the running gear should be of a superior material or else you should buy for a higher power than you expect to install, in order to have an increased factor of safety. Thus to buy for 35 horsepower would be right.

CAR WON'T RUN SLOW

Editor THE AUTOMOBILE:

Editor THE AUTOMOBILE:

[2,094]—Please advise me what to do to make my car run at a low rate of speed on high gear. A knock or miss develops unless the car is speeded up to ten or twelve miles an hour. At a higher rate of speed, or on a pull, it seems to work perfectly. Changing the gasoline feed does not remedy the matter, since in either case the car has to run at a rather high rate of speed before the engine works smoothly.

I have difficulty in starting the motor by cranking, either with rich or thin mixtures without first priming carbureter.

Weatherford, Tex.

Most carbureters have two adjustments.

Most carbureters have two adjustments, one on the needle valve or regular air inlet, and the other on the auxiliary air. The two work more or less in combination, and the proper combination is often difficult to find. You say you have adjusted the gasoline; have you tried the auxiliary air? Another possible cause is that the magnets of your magneto have lost their strength. This may have been caused by taking the magneto apart and failing to put proper "keepers" across the magnets while the armature was absent from its place between the poles, or their weakness may be due to natural depreciation. This would in a measure account for difficulty in starting the motor; we do not believe the priming or absence of it enters into the question, as on many cars this is necessary even under the best circumstances.

Remagnetization is a delicate process, and should not be attempted rashly; so the only way of telling whether this surmise is correct would be to try a new magneto. If there are other cars of the same make in your vicinity, you might try a temporary exchange of magnetos, which would at once show whether or not the trouble lay

LIKES OUR STYLE

Editor THE AUTOMOBILE:

Editor THE AUTOMOBILE:

[2,095]—I have taken great pleasure from time to time in looking over "Letters Interesting, Answered and Discussed." More than that, I think them of great value, especially to the person who drives his own car. So I can say that I was greatly surprised that any one would have the nerve to kick as in letter 2,073 of the Nov. 4 issue. This party must have been out on a tour with a friend, who wanted to know the name of every passing car. Being unable to make good, he kicks; either that or else he is trying to revert this section to advertising. What automobile owners want to know is what causes certain troubles and how to remove or prevent them. I wish to enter a protest against such kicks.

Chicago, Ill.

A HOME-MADE MACHINE

Editor THE AUTOMOBILE:

Editor THE AUTOMOBILE:

[2,096]—Will you please give me some information about a car which I made myself from parts of different machines. It has a 12-horsepower opposed motor, planetary transmission, and chain drive with nine teeth on front sprocket and 31 on the rear. The engine runs well without load and fairly wen on level ground, but doesn't seem to run fast enough in high gear to develop any power, or enough to pull up a five per cent. grade without changing to low. I have a new Schebler carbureter, and the engine has fairly good compression. The machine ious to go fast, but just to get it to pull up a small grade without changing to low gear. Fernandina, Fla.

The obvious thing for you to do is to

The obvious thing for you to do is to gear the machine lower. Nine teeth is rather few for a sprocket, so we suggest that you make the rear sprocket larger, instead of the front one smaller. Some cars of the same type use rear sprockets up to 40 teeth. If you put on a 39-tooth sprocket the speed of the machine would be reduced about one-fourth, and the pulling power on hills greatly increased.

The larger sprocket may, however, interfere with the design of your rear axle, if this is of the single-chain, central-drive type. For such possibilities the makers of these axles, in the stock sizes, provide curved bolts instead of the straight ones which straddle the sprocket and hold the two halves of the casing together. In case your axle is of this type, and the larger sprocket would interfere, you can obtain these curved bolts from the maker, or have them forged by a local blacksmith, and save the expense of a new one.

By the way, did you ever have your machine weighed on trustworthy scales? Most machines of this type weigh nearer 2,000 than 1,000 pounds. If you have not had the machine weighed, try it, and we think that you will find your 12-horsepower engine is doing pretty well after all.

This is really the vital consideration, for even with high power, if the weight be increased in proportion, there is no gain, and the extra weight must be driven at the expense of additional fuel. Less weight per horsepower means not only less fuel used, but in the matter of speed, the power is then more effctive. On page 314 of the Aug. 19 issue, you will find this subject discussed very thoroughly, with a series of figures given for the different classes of machines, taking the divisions by price from the lowest up to the \$5,000 cars. Your car would apparently come in a class which had an average power of 19.5, an average weight of 1,280 pounds, and an average ratio of power to weight of 65.6 pounds per horsepower. If your power and weight are right, the ratio of 83 is not bad.

HO Editor

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HOT WATER HELPS SOME

Editor THE AUTOMOBILE:

Editor THE AUTOMOBILE:

[2,097]—Will you please give me the name and address of a firm or of firms making a two-cylinder engine suitable for an Oldsmobile curved dash runabout, one that would go into the old machine without much trouble. I notice that some of the latest engines have a device for letting the hot water from the engine jackets into the carbureter, this giving more power and speed on heavy pulls. Do you know of any automobile companies that have this device on their cars?

ELDON C. FRIE. Duncan. Okla. Duncan, Okla.

As to the two-cylinder engine, nearly any opposed engine of this type would be suitable, and by consulting the advertising pages of THE AUTOMOBILE you will find that a number of firms making engines are advertised there. We do not know of any firm making an engine especially for this

In the matter of water jacketing the carbureter so that the hot water from the engine jackets may be used with beneficial effect of the action of the carbureter in cool weather, this is done by nearly every reputable carbureter manufacturer. This is usually fitted as an option, that is, the carbureter maker makes the same sized carbureter with the jacket and without. The purchaser has his choice, the charge for the jacketed form being but little more than the other.

After buying a carbureter so equipped, any handy mechanic can fit it to your car. All that is needed is several lengths of small diameter copper or brass tubing. A hole is bored into the water outlet over the cylinder head and another elsewhere in the water circulation system at any convenient place. Into these holes are fitted and soldered the tubes. It is then an easy matter to apply the tubes. When applied, the hot water rising from the cylinders when heated flows into the carbureter jackets, around and through them, out, and back into the water system again.

"EATS UP SPARK-PLUOS"

Editor THE AUTOMOBILE:

[2,098]—Could you please tell me why the first cylinder of a new Model T Ford "eats up" spark plugs? A new plug will run about one day of continuous running and is then seemingly "all in," even after cleaning it. The car is new and the cylinder seems perfectly clean. RUSSELL R. HOLMES. Whiting, Ia.

The answer to letter No. 2,100 above seems to fit your case pretty well, too, although your letter opens up several different possibilities. Your statement that the cylinder seems perfectly clean and that the plugs refuse to work after an experience in this cylinder, even after being cleaned, suggests that the trouble may come from another source, namely, overheating. This

overheating, of course, could be purely local and not otherwise affect the running of the engine. In fact, the construction of your engine suggests a way in which this might occur.

The cylinders are cast in one block, with the heads separate in another block. The cooling water passes from the cylinder block to the head block through a number of holes in the upper face of one and the lower face of the other, which register when the two are brought together. If the hole nearest the spark-plug of the first cylinder should become stopped up, the circulation might be impeded to the extent of allowing that part of the cylinder to become extremely hot. This heat would crack the porcelain of the spark-plug.

This is a deduction rather after the manner of Sherlock Holmes, and we are by no means sure that it is correct. An examination of your engine, by removing the cylinder head block, would quickly show, and in any case can do no harm.

OARAGE WINTER HEATING

Editor THE AUTOMOBILE:

Editor THE AUTOMOBILE:

[2,099]—Will you please advise me as to whether a heating plant should be installed in a small garage housing one car, in order to maintain the car in good condition after being put up for the winter. It has been suggested to me that unless an even temperature was kept the varnish and paint would crack and at the same time considerable rust would accumulate. An article in "The Automobile" concerning preparing the car for storage through the winter would be timely.

XX. Gambier, O.

We do not believe that such precautions as you describe would be necessary; certainly we can recall no acquaintance who ever went to similar trouble and expense, nor can we recall anyone whose car seemed to suffer from neglect to provide heating. If the varnish and paint are of suitable quality they should not be affected by any degree of cold to be found in these latitudes. As for rust, that can be cared for at the time of putting the car away. The motor, gears and driving mechanism should be thoroughly cleaned out and provided with fresh oil, and all parts which might be attacked by rust should be coated with pure grease or vaseline. We agree with you that an article on putting a car up for the winter would be timely, and it is by no means improbable that you will find one in an early issue.

In fact, it is not unlikely that one of the concluding chapters of the garage story now running, "The Private Garage Problem," will contain much matter on the subject of heating of automobile houses,

IONITION "SPARK GAP"

Editor THE AUTOMOBILE:

Editor THE AUTOMOBILE:

[2,100]—Will you kindly, through "Letters Interesting" or otherwise, help me out of the following dilemma? I have a four-cylinder water-cooled automobile, and have been having trouble with the ignition in No. 1 (front) cylinder. This cylinder has spells of refusing to fire, and no amount of coaxing will induce it to do so as long as the high-tension wire is attached to the spark-plug. If the high-tension terminal is detached from the spark-plug and held about 1-8 inch away, letting the spark jump from the terminal to the plug, the cylinder will immediately begin to fire, and continue as long as the terminal is held in that position. I have used new plugs and new batteries, but with the same result. W. A. ERVIN. Petersburg, W. Va.

Several years ago a number of spark-

Several years ago a number of sparkplugs were made with terminals designed to afford a second gap for the spark to jump, in just the way you describe. The object of this was to give a better spark inside the cylinder. For electrical reasons which are none too clear, this exterior spark causes a spark to appear at the regular sparking points when the latter are so sooted up that they refuse to show a spark otherwise. This may be explained by saying that the electric current, coming first to the outer gap, is banked up there until it is strong enough to jump across; and then it comes down on the second gap with a rush and goes across by its own momentum, as it were. The spark-plugs embodying this feature gradually dropped out of sight, as improvements in sparkplug construction and in motor lubrication made them, for the most part, unnecessary.

The first cylinder of your motor probably has some peculiarity which is very hard on spark-plugs, so that even new ones last but a short time. Although you do not say so, we believe that you have found that a new plug will work all right in the "hoodoo" cylinder for a short time. If this is true our conclusion is undoubtedly correct. The trouble may be due to the lubrication, some fault of motor construction causing the first cylinder to receive more than its share of oil. If your lubrication is by a force-feed oiler, feeding each cylinder separately, the remedy is to try cutting down the supply to the first cylinder. If the lubrication, on the other hand, is by splash to the cylinders, the trouble may be with the partitions in the crankcase, maintaining a higher level of oil in the first pit than in the others, or to an extra nut or other protruding part on the connecting rod big-end, which would cause it to throw up more oil. If the motor has one of the modern circulating systems of lubrication, the overflow hole from the pit into the pump well may be stopped up.

If you don't care to tamper with the lubrication system, why not make yourself a plug with a permanent exterior "spark gap?" You might fasten the terminal to the plug with a strip of fiber or other nonconducting material in such a way as to maintain the proper gap. Or, if you do not care to do this, there are spark plugs made which have a testing arrangement, which includes a gap of this kind. One of these should answer all of your requirements.

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Fig. 1-Development of Schebler carbureter, beginning in 1900, and ending with semi-automatic type of 1909

A CCESSORIES of necessity, as they relate to automobiles, differ from accessories in general in that the cars will not render good, if any service, without them. A radiator, for illustration, seems to be necessary to a water-cooled motor; a carbureter, likewise, is a necessity to every motor. A gradeometer, on the other hand, is not absolutely necessary; the car may be utilized in the absence of this device, although, as a convenience, such an instrument may have a fitting value.

In drawing the distinction, it is done for the purpose of pointing out the trend, not from guesswork, but as it seems to be reflected. Accessories of convenience will probably always be made in separate shops, simply because makers of automobiles will most likely have all they can do to turn out cars.

The more progressive of the specialists, feeling that they are in a position to compete with the world both in point of quality and price, keep adding to their buildings and improving their processes and, in all truth, the strides now being made are past describing. Obviously, the cost of an improvement, while it may foot up to many thousands of dollars in the abstract, amounts to very little per unit when the output is on an enormous scale, and the accessory makers are in a position to take advantage of this phase of the situation to the maximum extent, and this is one of the reasons for believing that they are with us to stay, and that they offer one of the solutions to the great problem involved.

A Concrete Example Will Best Show—Any further discussion of this phase of the automobile situation, along the lines

taken, would be a mere reiteration; the history of the accessory makers' growth, however, may be reflected by writing the history of some one capable manufacturer, and while the story will be told from one angle only, even so, it will be in its most simple form and leave more for the telling from some other point of view at a later time. Disregarding the fact, then, that there are many other plants which would serve perfectly to illustrate the permanence of the accessory-making industry, the one nearest at hand will be taken, and since the writer is at Indianapolis, it is but a short ride to the plant of Wheeler and Schebler, makers of the Schebler carbureter.

Referring to Fig. 1 (A) depicts the first carbureter made by George M. Schebler, in 1900, before he engaged in business with Frank H. Wheeler. The firm of Wheeler & Schebler was formed as the result of the good performance of the first carbureter, and the business acumen of Wheeler has been proven by the growth of the concern. The second carbureter, (B) Fig. 1, was brought out in 1901, differing from the 1900 type in some minor particulars. The point to be here made, however, lies in a certain

similarity of all the Schebler carbureters from A to J, inclusive.

Fig. 2 is a section of the 1900 type of carbureter, and the concentric float. somewhat modified to be sure, is still used. The first carbureter, in the light of present practice, was a crude device, but Schebler, than a violin maker of note, aimed to build a satisfactory carbureter for a motor he then built, one on the market

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having failed to find Schebler carbureter made in 1901, which one on the market has been little changed

such as would perform in a satisfactory manner. The carbureter offered as B, Fig. 1, was made in 1901 and it differs from the earlier type in that the float was improved and a bale attached to diametrically opposite sides engaged a lever, which, in turn, imparted motion to the needle-valve, thus controlling the flow of gasoline, after a fashion, more certain. Fig. 3 is a section of the 1901 type of carbureter.

In 1902 the carbureter shown as (C) Fig. 1 was brought out and letters patent were granted on the type. In 1904 some detail changes were made, as shown by (D) Fig. 1, and the business end of the industry took on a more promising turn. In 1905 the carbureter looked as at (E), Fig. 1, a section of which is given in (A), Fig. 4, and in 1906 more refinements brought the carbureter up to (F), Fig. 1, and in section as depicted in (B), Fig. 4. Model E came out in 1907, looking like (G), Fig. 1, and the section was as given in (C), Fig. 4.

Water-jacketing Was Introduced—By this time, owing to changes in the quality of gasoline, it was found that, under some conditions of service, water-jacketing offered advantages and

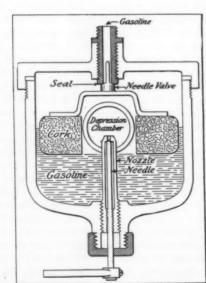


Fig. 2—Cross section of the first Schebler carbureter, made in 1900

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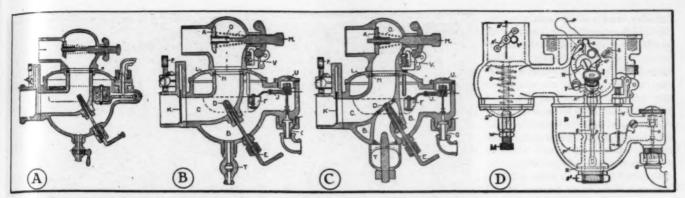


Fig. 4—Sections of Schebler carbureters as made from year to year, showing a certain similarity in design, style and finish

the Model F Schebler carbureter was offered to buyers. The exterior of this carbureter looked as in (H), Fig. 1, shown in section in (C), Fig. 4. The following year the company brought out an improved form of motorcycle carbureter, which has been continued, subject to all possible improvement down to the present. This carbureter is depicted in (I), Fig. 1, and (J), Fig. 1, is of the 1909 Model L carbureter, a section of which is offered in Fig. 5, with names of parts given.

Constant Refinement Price of Success—But one year (the second) was passed without bringing out a new model or making refinements of a character designed to improve the good working qualities of the carbureter. Had there been any disposition to avoid the cost of new models, it is avowed that changes would have been less frequent, but, as may be quickly determined by a little calculating, the cost per carbureter, of changing, is scarcely worth taking into account, excepting that it would be fatal to make a mistake.

By sticking to the main idea, confining the advances to a mere evolution, and refining as proof of better results would be the reward, the maker was enabled to advance the situation from year to year without risking a serious mistake, and as a reward for stability of design and manufacture as well as enterprise, the business grew in a fashion which may best be illustrated by a table showing the number of carbureters made and shipped:

CARBURETERS DELIVERED SINCE 1906.

Year.	Carbur Shipp		Carburetera Made.
1907	37,20	53	48,625
1908	49,8	76	57,513
1909	100,00	00	100,000
1910	(estimate) 200,00	00	200,000

The above tabulation tells a story of the marvelous growth of the motor accessory business, and also of the faith of one man in it; in 1907, when business in other lines looked bad, this concern went right on building carbureters, and actually did build 11,362 carbureters more than were sold, and there were times during the year when the stock in hand was even as high as 25,000 carbureters.

Present Situation Looms Up Big—A single maker of cars is now taking a car load per month (about 5,000 carbureters) from this one plant alone, and the foundry is using raw material on a basis as follows:

Copper2	car loads	per month.
Tin	6 tons	per month.
Lead	2 tons	per month.
Spelter	I ton	per month.
Home scrap		all made.

In this plant every part of the work is done, starting in the

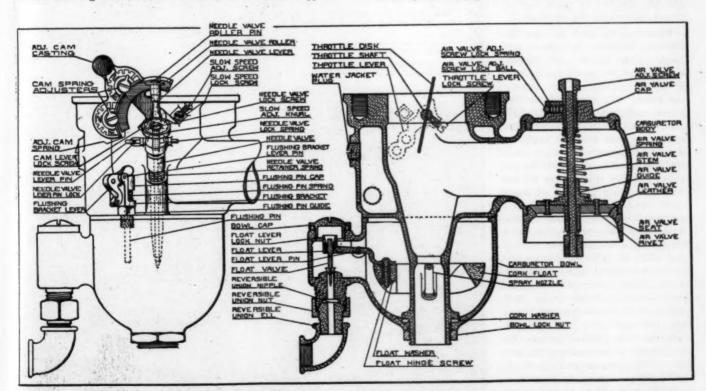


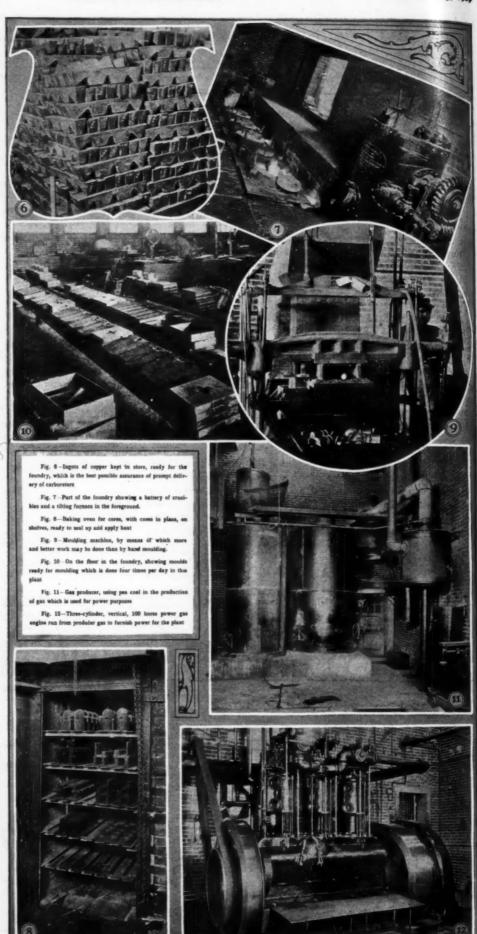
Fig. 5-Section of the present model of Schebler carbureter, showing strangle type, auxiliary air valve, and adjustments

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foundry, and ending with the final test before shipping. In order to appreciate the enormity of the undertaking, it will be necessary to follow through the plant and beginning with the raw material for the charge, in the foundry, as shown in Fig. 6, of copper ingots, it is but a step to the crucible and other furnaces. The illustration shows but a part of the battery of crucibles, and allowing from 60 to 80 bounds per charge for each crucible and five heats per day, counting the tilting furnace in the foreground, the capacity of the foundry is not far from the amount as shown above for the raw material purchased for the foundry during a recent period of one month. Gas is used for firing, for the most part, and the change to gas entirely, is rapidly being made.

In another part of the foundry cores are moulded, and Fig. 8 represents a core-oven, for baking them, of which there are two, side by side, and in addition to this provision the cores are heat dried in a room for the purpose. Some of the castings make their own cores and when this part of the work is ahead, the moulding is done partly by machine, one of which is shown in Fig. 9, while moulding in general is done on the floor as depicted in Fig. 10. The character of the work is under the control of the maker of the carbureter in this case, and experience has shown that it pays to use "new brass," thereby reducing "wasters" and the number of parts that are found wanting during inspection.

Much to Be Said for the Machining Process-A certain similarity exists between the big carbureter used to furnish producer gas to the gas engines and the output of the plant. The gas producer illustrated in Fig. 11, made by the Smith Gas Power Co., of Lexington, Ohio, is charged with pea coal twice each day and about one-half of a ton of this coal per day serves for the purpose. The fuel is burned in the generator G in the presence of atmospheric air and steam in definite proportions. The combustion of some of the coal which takes place due to the action of the blast, liberates heat, and under the influence of this heat, in the presence of excess carbon, the steam carried over is decomposed, contributing its oxygen for the carrying on of the combustion and liberating hydrogen as a desirable constituent of the resultant fuel gas. The combustion of the carbon in the presence of oxygen liberates heat and the decomposition of steam, under a suitably high temperature, in the presence of carbon, absorbs heat. To





obtain the desired quality of fuel gas, then, it is necessary to regulate the temperature, and this is done by properly proportioning the amount of air and steam by means of the regu-

Fig. 12 depicts a 100-horsepower, three-cylinder Rathburn gas engine. Provision is now being made to greatly increase the size of the power plant, it being the idea to displace some of the smaller (horizontal) gas engines with new type of 250-horsepower vertical engines.

What Happens Beyond the Power Plant - The carbureters, after they come from the foundry, are chipped, slicked off on grinders, and then they are subjected to the action of a sand blast as depicted in Fig. 13. This process leaves the carbureters free from core sand, and of an even surface all over. The product thus prepared is ready for machining operations and Fig. 14 is illustrative of the use to which special jigs are put in holding the work under a drill and assuring interchangeability of work. The jig G, despite the irregular shape of the carbureter, holds the work firmly, and it is but the task of a moment to set the same and begin drilling.

Fig. 15 is still another illustration of the way jigs are contrived to displace the irregular task which would follow were the workmen required to lay out the work and center the same for drilling. Fig. 16 differs from the preceding figures in that a special jig, or, in this case, chucking device, takes the part and fixes it in the correct relation for turning operations. The turret tool, of which a suitable number are at hand, does quick and accurate machining and is largely responsible for the even quality of the

In view of the presence, in carbureters, of a considerable number of small parts, it is found necessary to employ automatic screw machines to a considerable extent or put up with the ills of a famine market, and be short of material, more often than not. Fig. 17 depicts a corner in the automatic screw machine department with an Acme automatic screw machine (side view) in the foreground. These machines are devoted to the production of such parts in the carbureters as screws, nozzles, bolts, nuts, etc., made from bars of steel, hard brass, or other material, such as will best serve the ends. The automatic chucks of the screw machines, while they demand the use of materials, as bars coming close to size, are capable of accommodating themselves to quite some extent, although it is commercially possible to limit

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variations in diameter to 0.0005 inch above and below nominal diameter. Fig. 18 is a general view of the battery of automatic screw machines, and it is of more than a little interest, first, as showing the extent to which carbureters require the use of costly automatic tools if they (the carbureters) are to be produced in quantity, on a basis of interchangeability, and again, the compact plan of installing the tools will be of interest to those who may have to cope with just such problems.

Testing Is Done During the Process—When all the parts required are in sufficient quantity ahead, considering any given model, the work of assembling a lot is undertaken, and inspection is necessary, at every stage, in order to assure that the carbureters will pass the final test, one phase of which is shown in Fig. 19. In this case a considerable number of carbureters are set up in rows and each one is filled with gasoline to note if the metal is porous or if the joints leak. If the material is satisfactory and if the joints are all ground tight, the float is then adjusted in such a way that the gasoline will stand in the nozzle within 3-16 inch of the top.

Some Special Features for This Year—Referring to Fig. 5, it will be observed that the leather seat of the air valve is reinforced by a metal flange behind it. Time has proven that certain grades of leather will serve well for this purpose, but it has also been shown that the leather will curl up unless it is thus supported. True, the amount of the deformation is but slight, but it is just enough to unbalance the mixture and motorists are not always in fettle to cope with the ills which are natural to an unbalanced mixture.

The float, which is made of Spanish cork, is of the finest possible grade, so close, in fact, that it would absorb but little gasoline, even if submerged for months. In order, however, to safeguard the cork, it is subjected to a coating process which precludes the chance of float trouble. In the first operation, in the process of coating, a fine grade of shellac is cut up in grain alcohol, and when it is in a perfectly liquid state, and thin, the cork is submerged. When the time has been sufficient to allow the thin shellac to penetrate all the pores and form a skin all over, the cork floats are then removed and subjected to a drying process for sufficient time to assure that the shellac in the pores, as well as on the surfaces, is dry and hard. A second dipping is then given the cork; the shellac being more viscous but in even condition, and when this layer is dry and hard, if the cork, after being submerged in gasoline, shows the required degree of buoyancy, it is accepted.

The float lever pin (see Fig. 5) is not midway between the center of the float and the axis of the float valve; the lever

advantage is in favor of the float, and the result is that the valve seats firmly. The conical seat of the valve is easily ground to tightness, and the valve stem is of a fine grade of material, and light. Inertia, therefore, will not have a mal influence, and the float, being submerged in gasoline, considering the lightness of cork, will not set up motion when a car is negotiating bad roads, so that the flow of gasoline, to the bowl, is always carefully regulated and flooding is entirely avoided.

The sectional drawing, as reproduced in Fig. 5, presents ample evidence of an adequate thickness of walls, but what is more to the point is the perfectly even casting work, with all cores so nicely set that an uneven thickness of walls at any point is avoided. New brass, that is, brass made from ingot copper, tin, lead and spelter, with just enough home scrap to fetch up the teeming mass, accounts for the even quality of the castings, but the foundryman, since he has a plant fitted out for this especial work and confines all efforts to products of this character, is enabled to train a corps of moulders up to a high state of efficiency. It is equally an advantage to do all the work of every character, considering the question of the delivery of carbureters, for in these days, with a material famine well in sight, makers of automobiles will naturally feel confident when it is made plain to them that every situation is under control in the one plant and the raw material is corded up in the storehouse, there to be taken out and melted up as required.

All buildings are of a substantial character, brick and reinforced concrete, and the new addition, which will take up about a half a block just back of the present plant, will presently be under way; a church for negroes, and one or two private dwellings, now on the ground, having delayed matters somewhat.

Everywhere in the plant provision is made to cope with fire, and sanitary arrangements, as well as other conveniences for the workmen, makes the plant one that is far from labor trouble of any character, so that, deliveries are made with great certainty and the company is frequently in a position to fill an order for five or ten thousand carbureters the day the order is received.

RAMBLER REGULARITY AT KENOSHA

Kenosha, Wis., Nov. 22—Work on the new Rambler models is advancing with such exactness as to put deliveries in the same class as the Twentieh Century Limited, and The Automobile's representative in going over the plant finds many evidences of methods that make for precision of fit of parts, so that, in assembling, delays will scarcely have to be coped with. The situation all along the line is for interchange ability of parts, and this very desirable condition is a prime issue in the production of Rambler cars under the direction of Thomas B. Jeffery & Company.

The company, in order that its large stock of repair parts will be a real accommodation to its patrons, keeps an exact record of everything shipped, and the system of duplication of parts in vogue at the plant, makes it worth while to do so. The new laboratory, which is now sufficiently complete to be of the greatest service, is on such a large scale that it almost outstrips the name. A new 500-horsepower generator set, directly connected with a Corliss engine, will soon be in operation, and present additions to the Jeffery concrete construction, saw-tooth buildings will bring the aggregate up to 20 acres of floor space.

Additions to the building number five, amounting to over 1,600 square feet, which makes room for the new laboratory.

TARRYTOWN BECOMING MAXWELLVILLE

TARRYTOWN, N. Y., Nov. 22—Tarrytown is gradually becoming Maxwellized. To keep abreast with the enormous demand for 1909 models the company is compelled to acquire all available factory space in the immediate locality regardless of cost. The newest acquisition, that of the Tarrytown Tile Works factory, provides 62,520 square feet, and though only recently acquired is in full operation. Again, the new brass foundry on the company's property with 21,500 square feet is just completed, soon to be followed by the new aluminum castings plant with twice the area. The company now controls six plants, and with the completion of those now in process of erection will employ nearly 6,700 employees.

SUCCESS OF THE FISK FREE AIR IDEA

Some time ago the Fisk Rubber Company conceived the idea of furnishing its branch houses with compressed-air tanks, which are placed on the sidewalk close to the curb, for the convenience of passing automobilists. On opening the tank box, a rubber tube is disclosed, to be attached to the tire valve, and a lever and gauge regulate the amount of air. Keys to these boxes are furnished to automobilists on request.

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WHAT THE ACCESSORY PHASE OF THE INDUSTRY REPRESENTS

W E frequently hear the fixed phrase "parts makers" and it is sometimes said that they are not imbued with the idea of doing accurate work beyond the barest necessity. Then, there are the class of persons who confuse parts makers with accessory manufacturers. They fail to discriminate as between the makers

F. H. Wheeler

of complete units and members of units; as if, indeed, there is no difference as between a piston for a cylinder of a motor and a carbureter or a radiator. Certainly, there is a vast difference, and it is self-evident that there is far less chance of trouble due to the purchase and use of a carbureter than can follow when a crankshaft, for illustration, is made in one shop, the cylinders in another, and the remaining parts somewhere else; all to be assembled by the final maker of the car.

Besides, there is a further distinction to be made; accessories of convenience, catering to luxury, can

never occupy the position which is natural to an accessory of necessity. Having made this distinction, rather with the expectation that it will convey the impression that necessities must be taken in all seriousness, it is a natural sequence that accuracy is the child of the work done in the production of a necessity.

Obviously, a thing made by a specialist, if it is a serious undertaking, will be far more likely to thrive than when it is given the slight care which is all that can be expected from even a corps of designers who have to cope with the intricacies of 900 different genera of parts which will be found in a full-fledged automobile. But there is still another phase of the problem to be given at least scant attention; makers of automobiles, even if they build a large number of cars, cannot expect to rival the manufacturers of necessary accessories who cater to numerous car producers. While it is true that cars are made in thousands in some instances, it is equally a fact that manufacturers of necessary accessories foot up on their order books in hundreds of thousands.

When units are made in hundreds of thousands, the cost of special tools, fixtures, jigs, and equipment falls to a level so low that the overhead charges per unit may be even in fractions of a mill. The cost, therefore, of a set of tools such as will guarantee absolute accuracy is no bar, and the result is that the accessories made on this tremendous scale, under fitting conditions, are so accurate that there is no further chance for improvement.

Having arrived on the plateau of accuracy in the manufacture of accessories, brought about as a natural evolution in the process involving quality, it remains for accessory manufacturers to hold their own, which is a matter of providing for the future by anticipating the wants of customers, which is not an easy task to cope with, owing to the rapid growth of the industry.

In estimating on the future, basing prognostications on the past year, it has thus far been impossible to be conservative and to be anywhere near right. The wildest imaginable figures seem to be still more wild when they are exceeded, as they invariably are, and yet it is a serious matter to fail to come up to the requirements in the production of accessories, so that success, in its broadest aspect, will come to the class of accessory manufacturers who build right, think big, and prepare to receive business on a basis of a half million automobiles per annum, and that, too, in the near future.

RELATION OF ACCESSORY MAKERS TO CAR BUILDERS

In the manufacture of accessories for automobiles there are several terms to be coped with, brought about, to a vast extent, by relations which producers of accessories bear to makers of cars. The accessories, as carbureters, radiators, etc., are made in sizes, and it is not always possible to select the size of carbureters, for illustration, such as will be a perfect fit. The difficulty is brought about by a lack of co-operation of makers of motors and

of carbureters. As the state of the art will permit, considering the designs made, it is better to carefully consider the sizes of motors and select the proper carbureter in every case, for then the carbureter, instead of having to cope with the bad relations due to the poor selection, will respond more perfectly under severe conditions and will afford a more pronounced degree of flexibility under conditions of changing speed.

The torque of a motor may be relatively high at some one speed, due to the perfection in design of the motor itself, but it will not be on a basis of constant torque at all speeds.

Geo. M. Schebler

unless the carbureter is free from dead points and capable of delivering a mixture of a constant richness at all speeds. It is evident, as before stated, as present in carbureters of advanced designs, but to realize it to the maximum involves the deliberate consideration of the size of the motor when selecting the carbureter. If the carbureter is of the exact right form from every point of view its universal properties will then be there to influence the torque of the motor instead of being absorbed in the process of bringing up the average working conditions in the presence of defects of selection. Under these more perfect conditions the high torque due to motor harmony will be maintained at all speeds and the service rendered will involve flexibility to the maximum possible extent.

In practice, when the carbureter reaches the ultimate user there are one or two points which can well be reduced to formula. If a motor fails to perform in a satisfactory manner it is a fallacy to at once assume that the carbureter is out of order. It is more chance that the ignition system is in need of a little attention or that the compression in some one or more of the cylinders is down. The first recourse, then, is to be sure that the ignition is in good working order and properly timed, and then observe if the compression is in proper presence in the respective cylinders. Even so, it is necessary to see if there is any more gasoline in the tank, and since gasoline is loaded with foreign matter, it is not difficult to understand how such matter may impede the action of the more delicate parts of the carbureter. The natural inference is that the carbureter should be examined with a view of cleaning it out, if necessary, before making adjustments. The final operation, under the circumstances, is to adjust the carbureter if necessary, and then only.

In view of the conditions in point of design and the respective makes of carbureters nothing can be said in a general way which will serve as a guide in the process. Even so, it is extremely important to approach satisfaction with the utmost care and to avoid upsetting the good adjustment which may obtain, only to find that the trouble is somewhere else.

See M. Schebler



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EUROPE'S DISILLUSIONMENT

Europe's automobile industry has had a sad awakening. Just at present it is undergoing a more or less painful adaptation to new conditions, which but few of the constructors had the wisdom to foresee.

The trouble really began two or three years ago. A body of large and world-famous manufacturers had been pursuing their majestic course, building four and sixcylinder cars of forty horsepower and more. Their cars, from the engineering point of view, were very creditable productions. Suddenly these manufacturers discovered that there was no longer a demand for their cars. Intent only on a visionary ideal, they lost touch with their public.

The market for large cars is necessarily limited, and even more limited in Europe than in America. market suddenly filled up, and the annual production was about ten times the amount necessary to keep it full. About the same time several European governments got the idea that automobiles were a good subject for increased taxation. Result: no Grand Prix, no Paris show, no Berlin show; also a hasty renewal of interest in the popular-priced car.

Then the big and famous makers discovered further that it was not sufficient merely to announce a popular model in order to bring to their feet this profitable class of trade. A number of firms whom the famous makers had been accustomed to look down on superciliously had formed a solid and thriving patronage, and were by no

means disposed to relinquish it. Moreover, the buyers of medium-priced cars, far from being dazzled by a name, required good and sufficient proof of superiority before signing their checks.

After the first shock of disillusionment, most of the big makers took their lessons manfully. They realized that they must give their best, both in designing and in The supreme efforts of their talented workmanship. designers, of their well-equipped machine shops and corps of skilled workmen were required to win a place in this new aristocracy of the industry.

It was to be expected that the small cars turned out by such factories would have a neatness and refinement in detail often lacking in the output of a cruder plant; yet the latter had the advantage of long experience in that class of work, and excelled through sheer strength and solidity. Between these two camps the struggle has been keen. In the striving for advantage much more attention than usual has been paid to new ideas in construction, such as slide and rotary valves. The value of such competition to the industry cannot possibly be overestimated.

For this reason the Olympia Show-held solely because the association promoting it is composed of popularpriced makers-includes within its walls the finest exhibit ever before seen of "the cars of the future." The forty-horsepower model (foreign rating) has been somewhat relegated to the background; the salesmen speak of it reluctantly, unwilling to admit that it has been continued. The day of the "forty" is well-nigh past; the day of the "fifteen" is just dawning.

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AS TO INTERNATIONAL RACING

It is among the possibilities that international automobile racing may have a fairly active renewal innings next year, especially if the congress adopts the recommendations of the Manufacturers' Contest Association as proposed through the American club which has a sitting in the international organization.

But the indications are that international racing of the old and popular sort has come to its conclusion; firstly, because the foreign makers figure so slightly in the American market, and, secondly, because they have found it unprofitable to continue big competitive events in Eu-

rope to keep alive the home market. The foreigners, as a whole, are turning their attention to aviation and its spectacular contests, simply through a widespread belief that the value of automobile road contests, to them, has depreciated far below par. Hence, little may be expected from the American recommendations in the forthcoming meeting in December, though the effort to obtain well-defined international conditions for stock-car racing is praiseworthy, and indicates plainly that the Americans now have no hesitancy whatever in engaging with their foreign competitors in any kind of a contest.

Time was when any American race of importance had a field overwhelmingly foreign in complexion, but it is now a certainty that the excellently managed and contested Savannah Grand Prize race was the finale in real international competition, either here or abroad. Of course, there will be races where both American and foreign cars will participate, and these shall serve, in some degree at least, to diversify competition.

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AUTODOM'S HUB SUPPLIES A LIVE NEWS BUDGET

DETROIT, Nov. 23—By far the largest project of its nature with which Detroit has had to do in recent years, and which promises to eclipse anything else of its kind locally in magnitude, is about to be consummated, according to reports from official sources.

The deal involves the establishment in Detroit of headquarters by the General Motors Company, and the installation here of a group of plants of hitherto unequaled size and capacity. Options on sixty acres of land have been secured, and more property is being acquired as rapidly as possible, although to date the operations have been carefully kept under cover. It is understood that the investment in real estate alone will exceed \$300,000, and that the contemplated plant when completed will furnish employment to 5,000 men. The details of the project have not been worked out to a point where much can be said authoritatively, but it is understood that the Detroit plant will be devoted largely to the manufacture of parts, as well as turning out complete cars. Unless something unforeseen occurs to block the undertaking, ground will shortly be broken, and it is the intention to have a major portion of the plant in operation for 1910.

Concentration of General Motors in Detroit

Ever since the General Motors Company was organized and began buying up plants throughout Michigan dissatisfaction was expressed by President W. C. Durant and his associates over the vast amount of territory over which their holdings were scattered, and the even more serious drawback of being to a considerable extent dependent upon outside interests for much of their material. This, coupled with the announcement that orders booked for next year will tax every plant of the General Motors Company to its utmost, and that Mr. Durant predicts 1911 will be an even greater year, is believed to be the controlling factor in the decision which will give Detroit another enormous plant, and materially strengthen the proud position it now holds as the hub of the automobile industry of the world. When the Buick Auto Company something like a year ago rented one of the most expensive business blocks on Woodward avenue, in the choicest part of the retail district, and converted it into a salesroom, leaving the other three floors idle, wise ones figured that the company planed moving its head offices from Flint to this city. Whether the building will now be occupied by the head offices of the General Motors Company, of which the Buick is now a part, cannot be determined at this time, although there are rumors to that effect.

Owen Motor Company Developments

Meanwhile, other interests are active, and the incorporation of automobile companies goes merrily on, with many others in prospect.

The new company foreshadowed in The Automobile two months ago, when Angus Smith resigned as secretary-treasurer of the Olds Motor Works, and Ralph R. Owen gave up his position as factory manager of the same concern, came into ex-

istence with the incorporation of the Owen Motor Car Company, with a capital stock of \$500,000. The principal stockholders of the Owen Motor Car Company are R. R. Owen, Angus Smith and Frank E. Robson. The company has already secured options on a desirable site in Detroit, and it is the intention to begin the erection of a plant at once.

A Rumor Also Involves Lozier

A report going the rounds, and generally accepted as accurate by those identified with the automobile industry, is to the effect that the Lozier Motor Company, of Plattsburg, N. Y., will shortly establish a branch factory in Detroit, to cost \$800,000. Several local capitalists of prominence are reported as backing the undertaking. It is said to be the intention to produce a car selling around \$3,000.

Newcomers That Are Partially Heralded

Detroit and Pittsburg capitalists have taken options on thirtytwo acres of land in Wyandotte, just at the edge of the city, and are said to be contemplating building two large plants, one for the manufacture of machine parts only and the other to turn out complete cars.

President DuCharme, of a Hornellsville, N. Y., auto company, is also negotiating with Wyandotte land holders with a view to establishing a factory there, which he declares would furnish employment to several hundred men.

The Watt Motor Company, capitalized at \$100,000, has just been incorporated, and promises several surprises once it gets under way. Automobiles and marine engines will be manufactured on a large scale, the feature of the motor being that it can be reversed without the use of air compressors, according to the designer. Starting, stopping and reversing is all controlled by a single lever, and although the motor is of a six-cylinder type any number of these can be cut out at any time without moving from the driver's seat, leaving any desired number in operation. It is expected the new car will be on the streets early in January.

All of which is not so bad a showing for one week even in Detroit, where big things in the automobile world are of such frequent occurrence that they no longer arouse surprise.

Factories That Are Working Day and Night

In addition to the new companies entering the local field, those already established continue to branch out at a surprising rate, builders working day and night in an effort to keep up with the demands for more space. With no less than a half dozen additions now under way, the Studebaker E.-M.-F. Company has taken out permits for a two-story brick factory 80 x 265 feet, to cost \$40,000. In accordance with its long standing policy of not waiting to complete one addition to its enormous plant before beginning another, the Packard Motor Car Company also figures in the week's proceedings with permits for a five-story reinforced concrete structure, 60 x 262 feet, and 72 feet in height, to cost \$65,000.

A. L. A. M. HOLDS SPECIAL SESSION

At the A. L. A. M. headquarters, 7 East Forty-second street, its executive committee held a two-day session last week, Thursday and Friday. An announcement had been anticipated, but no information was forthcoming after the meeting. It is understood, however, that something important will be made known in the next fortnight. The impression prevails that W. E. Metzger, formerly of the E-M-F Company, will be successful in making license arrangements for his recently formed company. It is known, however, that he has not consummated arrangements with the Hewitt Motor Company. A definite statement may soon be forthcoming from the Metzger Company.

SYRACUSE CLUB ACTIVE IN SIGN-POSTING

SYRACUSE, N. Y., Nov. 20—Secretary Forman Wilkinson, of the Automobile Club of Syracuse, is still receiving requests from neighboring towns and villages for road signs giving warning to tourists of crossings, bad hills, etc. During the season the club has sent out several hundred signs into various parts of the country hereabout, posting nearly every road leading out of the city for thirty or forty miles, and in some instances much further. As a result of the club's activities, its membership is steadily growing, with indications of a very substantial increase before the Spring driving season opens. The roads in the vicinity have been much improved.

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DETAILS OF DETROIT'S NEW WARREN

DETROIT, Nov. 22—The Warren Motor Car Company, of which the organization was recently reported, is now insatlled in its plant at the corner of Isabella and Michigan avenues, in this city. The company, which is capitalized at \$100,000, is headed by Homer Warren. John G. Bayerline, formerly with the Pope Mfg. Co., and the Olds Motor Works, and more recently with the Hudson Motor Car Company, is vice-president and general manager. R. W. Allen, secretary, is another graduate of the Olds Motor Works and the Hudson Motor Car Company. W. H. Radford is chief engineer. The company will deliver 500 cars before July 1, 1910.

The Warren-Detroit, as the car will be known, will be turned out as a roadster. Its motor has four cylinders, 4 by 4 1-2 inches, cast en bloc, with valves on one side. Ignition is by Volta magneto and dry cells. The clutch is a leather-faced cone, and the change-gear selective, giving three speeds forward. Springs are semi-elliptic front and three-quarters rear. The wheelbase is 110 inches and the tires 32 by 3 1-2 front and rear. The car complete will sell for \$1,100, and deliveries are expected to begin February 1.

BRIARCLIFF COMMITTEE GETS MONEY

The Briarcliff race committee won back the \$4,000 it deposited to guarantee against injury to roads in the Briarcliff race, April, 1908. The money was deposited on the demand of Frederick Skene, then New York State engineer, who threatened otherwise to withhold permission to use the new roads in Westchester County, which were included in the circuit. He agreed to return the money if the roads were not damaged, or to return the balance after making such repairs as were necessary. The committee did not get any money, however, and was forced to bring suit. According to the decision of Supreme Court Justice Platzek, the \$4,000 must be returned in full, with interest.

FORD DISQUALIFIED IN TRANSCONTINENTAL

The Contest Committee of the Automobile Club of America has decided that the Ford car No. 2, which had been declared the winner of the New York-Seattle race last summer, was not entitled to the award. The car has been disqualified on account of the substitution of its motor en route. The Shawmut car No. 5 has now been declared the winner.

GENERAL MOTORS ABSORBS ELMORE

Toledo, O., Nov. 22—The General Motors Company nov. claims as its property the Elmore Automobile Company, located a: Clyde, O., the transfer having just been made at a price said to be around the half-million mark. As to the intentions of the new owners, nothing has yet been officially announced, but it is hinted that the factory will be entirely rebuilt, overhauled, and enlarged to such an extent as to make it one of the largest and most important plants owned and operated by the General Motors Company. The location for such an enterprise is said to be ideal, both on account of shipping accommodations, three direct trunk lines running through the city and one electric line, and on account of low taxes and sanitary conditions.

The Elmore Automobile Compay was owned and operated by H. V. Becker and his sons, James and Burton. Twenty years ago the father operated a small stave mill at Elmore, a village near Clyde. About this time bicycles came into the market, and securing an abandoned factory at Clyde, Mr. Becker moved there and started making bicycles. When wheels became a thing of the past, so far as the craze was concerned, the Beckers started manufacturing automobiles, the firm being one of the pioneers in the automobile industry. The factory has been several times remodeled and enlarged.

CANADIAN AUTO SHOW IN TORONTO

TORONTO, CAN., Nov. 22—The Canadian Automobile Show will be held in the St. Lawrence Arena, Toronto, under the auspices of the Ontario Motor League, from February 24 to March 3, 1910. E. M. Wilcox, secretary of the League, will be the manager. There are some 30,000 square feet of space available in the building. An elaborate plan of decoration will be carried out. The League proposes to have the annual convention of members and others interested in good roads during the week of the show. The session will last three days.

APPERSON WINS LOS ANGELES RACE

Los Angeles, Cal., Nov. 22—The Apperson "Jack Rabbit," driven by Harris Henshaue, won the 150-mile race at Ascot Park to-day in 3 hours 45 minutes. Guy Irvin, who drove a Franklin car, was probably fatally injured when his car went through the fence. R. McIntyre, his mechanic, was hurled from the machine, but not seriously hurt.

THE AUTOMOBILE CALENDAR

Dec. 22-29.....

mobile Club.
Dec. 31-Jan. 7New York City, Grand Central Palace, Tenti International Automobile Show; American Moto Car Manufacturers' Association, with Importers Automobile Salon and Motor and Accessory Manufacturers. Alfred Reeves, General Manager, 50: Fifth Avenue, New York.
an. 8-15New York City, Madison Square Garden, Tenti National Show, Association of Licensed Automo bile Manufacturers.
(an. 17-22 Philadelphia, Second Regiment Armory, Automo bile Show. J. H. Beck, Secretary, 216 Odd Fel lows Building.

Shows, Meetings, Etc.

Dec. 25-Jan. 1.... Columbus, O., Automobile Show, Columbus Auto-

Jan. 24-29	Detroit,	Wayne	Hotel	Gardens,	Third	Annuai
	Automob	ile Show	Detroi	t Auto D	ealers'	Associa-
1	tion. Jo	hn Gillisp	ie, Man	ager, Hot	el Tulle	er.

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Feb. 19-26	Newark	. N.	J.,	Essex	Troop	Armory,	Automobile
	Show. N	JAW	Jer	sev Ex	hibition	Compan	V.

Utah Automobile Dealers' Association. W. D. Rishel Manager, 1-5 East First South Street.
Feb. 21-26Cincinnati, Music Hall, Automobile Show, Automobile Club of Cincinnati, Jesse Lippencott, Chairman Exhibits Committee, Gibson House.
Feb. 22-26Kansas City, Mo., Convention Hall, Fourth Annual Automobile Show.
Feb. 22-27Milwaukee, Wis., Auditorium, Second Annuai Automobile Show, Milwaukee Automobile Club.
Feb. 24-26 Binghamton, N. Y., State Armory, Automobile Show. R. W. Whipple, Secretary.
Feb. 24-Mar. 3Toronto, Canadian Automobile Show, Ontario Motor League. E. M. Wilcox, Secretary.
March 5-12Boston, Mechanics' Building, Eighth Annual Automobile Show, Boston Automobile Dealers' Association. Chester I. Campbell, General Manager, 5 Park Square.
March 12-19Syracuse, N. Y., State Armory, Automobile Show, Syracuse Automobile Dealers' Association.

Feb. 19-26...... Salt Lake City Auditorium, Automobile Show,

March	21-30	.Buffalo,	N.	Y.,	Cor	nve	ntion	Hall,	Third	A	nnuai
		Power	Boat	ar	nd	SI	ortsm	en's	Show,	E	uffalo
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Feb. 4-6...... New Orleans, Annual Mardi Gras Speed Carnival, New Orleans Automobile Club.

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WRIGHTS FORM \$1,000,000 AEROPLANE SYNDICATE

Some of the most prominent capitalists of America, in conjunction with the Wright brothers, have organized a company capitalized at \$1,000,000 to manufacture aeroplanes. The incorporation was effected at Albany, N. Y., November 22. The incorporators are Cornelius Vanderbilt, Theodore P. Shonts, Allan A. Ryan, Morton F. Plant, Howard Gould, Andrew Freedman, Robert J. Collier, Edward J. Berwind, August Belmont and Russell A. Alger. The announcement was made by De Lancey Nicoll, of the law firm of Nicoll, Anable, Lindsay and Fuller. The company will be a close corporation.

Either Orville or Wilbur Wright will be president of the company, and the other brother and Clinton R. Peterkin will be vice-presidents. The treasurer and secretary have not yet been chosen. A meeting will be held within the next few days to elect officers. The executive committee will consist of Messrs. Shonts, Freedman, Belmont, Alger and the Wright brothers. The main offices will be opened November 29 in the Day and Night Bank Building, at Forty-fourth street and Fifth avenue, New York.

Statements surprising even to the most sanguine believers in aeroplane have been made by the promoters of the company. According to Mr. Nicoll, the Wrights have for several years purposely refrained from revealing by word or performance the possibilities of their machine, and the public has many surprises ahead when the full powers of the invention are disclosed. Mr. Nicoll is further quoted as saying that the Wrights believe an

aeroplane for carrying twenty passengers is perfectly feasible, and that such machines will be constructed by the company in the near future. However, the brothers do not believe that the ocean will be crossed by a heavier-than-air machine until a motor has been invented with a fuel consumption far lower than any made at present. A field will be developed for the aeroplane in the West, for passenger service and carrying the mails.

An aviation field is to be opened during the coming winter in Florida for the instruction of prospective customers, and a staff of instructors will be maintained. It is said that the manufacturing plant will be located at Dayton, O., and that a number of the machines will be delivered by May 1. Those who order machines in advance will be given instruction in Florida during the winter.

The new-formed company will take every possible legal measure to protect the Wright patents, which those of the promoters who have made statements believe are fundamental. One fight which the company has already assumed is the injunction proceeding against Glenn Curtiss, which will come up December 14 before Judge Hazel in Buffalo.

When asked whether, in substance, the syndicate did not amount to a flying machine trust, which would monopolize the manufacture of aeroplanes, Mr. Nicoll replied that the Wrights unquestionably were the owners of all important patents on heavier-than-air machines, and that their claims would be defended by the company against all comers.

BISHOP FAVORS DENVER BALLOON RACE

Boston, Nov. 22—The New England Aero Club held a banquet to-night in commemoration of the one hundred and twenty-fifth anniversary of the first balloon ascension. Cortland F. Bishop, president of the Aero Club of America, spoke in favor of his plan for a series of aeronautic contests in different cities of the country, which he believes is the only means of inducing the prominent French aviators to cross the Atlantic. Mr. Bishop urged the New England club to join in promoting one of the series.

Denver is favored by the Aero Club president as the location for the international balloon and aviation meets. The location is especially good for balloons, and new world's records for distance might be made there. Mr. Bishop said that he thought dirigibles were impracticable, and that no provision would be made for them in the meets. Concluding his speech, he offered the New England club a cup as a trophy for long-distance balloon flights, to be competed for during the coming year.

FOR BALTIMORE-WASHINGTON AERO MEET

A committee of citizens of Washington and Baltimore, headed by Thomas F. Walsh, arrived in New York Tuesday morning to present to the Aero Club of America their reasons for wishing the international aeroplane meet next year to be held near their cities.

The movement to have this aviation event held in Washington was started soon after Glenn Curtiss won the international trophy at Rheims. Later the citizens of Baltimore organized an aero club and formed a partnership with the Washington men, whereby the two cities were to pull together for the meet. Both cities have raised funds which together will guarantee \$100,000 for the expenses of the meet.

The Wright brothers and Glenn Curtiss have been invited to be present when the matter is discussed, at a dinner to be given at the Metropolitan Club in New York Tuesday night, by Mr. Walsh. A committee of the Aero Club of America will be present, as well as several members of the Wright syndicate.

OBSERVED BY AN ELECTRICIAN ABROAD

E MIL GRUENFELD, chief engineer and designer of the Baker Motor Vehicle Company, has just returned from a visit to European centers, and has expressed some interesting opinions on foreign progress. The most remarkable tendency, Mr. Gruenfeld says, is that toward shaft drive. Panhard, Benz, De Dietrich, Mors, Fiat, Berliet and others who formerly used chain drive exclusively, are all changing to shaft drive.

The greatest objection to European electrics, Mr. Gruenfeld says, is the use of very thin plates in the batteries, which, although they give a greater initial mileage, are too short-lived to be practical. The series-wound motor is becoming standard, and all the later models are of the single motor type with double speed reduction and shaft drive. The drum type controller is standard, also, and the electric brake and "recharging point" formerly used have been discarded.

European electro-chemists experimented with alkali batteries for many years, but could not overcome the disadvantages of the great potential drop under overloads and the limited recuperative power, a fault which the late American batteries of this type still show. For these reasons the pasted lead battery is almost universally used.

Solid and cushion tires have both been tried abroad, especially for taxicabs, but on account of the vibration and consequent loosening and breaking of mechanical parts have practically been discarded. Even the electric trucks and buses are being equipped with pneumatic tires of the twin and triple variety; that is, with two or three individual tires side by side on the same wheel. European cities are much more congested than those in this country, which gives the electric an added advantage. Mr. Gruenfeld sees great possibilities in the export trade.

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GAETH STANDS PAT ON ITS 1909 MODELS

CLEVELAND, Nov. 22—For the season of 1910, the product of the Gaeth Automobile Company will show so few changes as to warrant the statement that the company is "standing pat" on its last year's model. This is praiseworthy, for it shows that the business has reached a stable foundation when no changes are brought out or suggested by another twelve month's use.

wheelbase has been increased by 6 inches making it now 120 inches. This is taken advantage of in the body, particularly in the length and foot room of the tonneau. A most noticeable tendency is the offering of dual ignition as an option, the second system taking the form of a high-tension jump spark outfit, with a Bosch magneto supplying the current.

The 1910 Gaeth is the Twin Brother of the 1909 Gaeth

Thus the changes for the 1910 car include such microscopic alterations as a two-inch addition to the length of the rear springs, as well as changing the material to vanadium steel. Then the valve sizes have been slightly increased to correspond with the modern tendency toward very large valves. Also the

Since this firm has always been a steadfast advocate of the low-tension system, this addition is noticeable. The make and break type is still put on as the regular ignition, in which a Bosch low-tension magneto supplies the current, the other being added only upon special request.

Distinctive describes the Gaeth clutch, which is unchanged. This is of the contracting band type, acting upon a special drum within the flywheel. The means of operation differs from the conventional, in that the pedal which operates it works backward to release, rather than the ordinary clutch pedal which works forward that is, taking the foot off of the clutch pedal releases the clutch. Some of the other

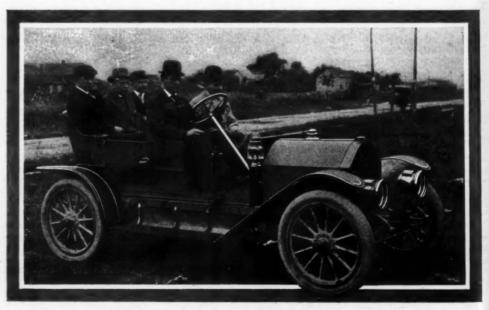
features of the single chassis to be produced are: Double brakes, both placed upon the rear wheels and drop-forged crankshaft. It will be recalled that the motor is of the four-cylinder type, of 4 7-8-inch bore and 5 1-4-inch stroke. This is a long-stroke motor, and should deliver more than 40-horsepower.

FIRST GREAT WESTERN THIRTY OUT OF THE FACTORY

PERU, IND., Nov. 22—Interest now is concentrated wholly upon the newer models, designated by the manufacturers as 1910 models. The first of these are beginning to come out of the various shops all over the country. The illustration on

this page shows the first product of the factory in Peru, Ind., of the Great Western Automobile Companies to bear the date of 1010. This is but a toy tonneau job and intended to seat only four. That the space allowed is unusually liberal is proved by the picture, which shows a seating capacity of five people. This comfort is a point which is often overlooked in the selection of machines, despite its great value and real necessity. The five men shown in the car, as illustrated, are Wm. Crossley, engineer, driving, and at his side, E. Mack Morris, general manager. The passengers in the rear seat, reading from left to right are: Paul Creighton, superintendent; R. H. Bouslog, secretary, and R. A. Edwards, director. Special attention is called to the enclosing sheet metal protection for the passengers,

visible along the side of the car, just below the frame, and extending from the latter to the running board. This is a recent addition to the construction of the car, and is intended to protect the passengers from mud or dust, which would be thrown up.



Great Western Toy Tonneau with Five Notable Passengers

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EARLY DELIVERIES OF NEW MOON MODEL

S_{T.} Louis, Nov. 22—Year by year the deliveries of new model cars has worked back from the fall of the year of the model to the late fall of the previous year. The best result of this has been to put the new cars into the purchaser's hands at the actual beginning of the year. As an instance of early deliveries now being made, may be cited that of one of the firms located in this city. The Moon Motor Car Company will commence to make regular deliveries in December of its new model, the Moon Thirty, which sells for \$1,500. The car is new in a sense that it is being shown to the public for the first time, and it has been running for nearly a year, undergoing rigorous tests, and began to be built two years ago.

This Thirty is anusual in several respects, particularly noteworthy in a car to sell for so modest a price. Unlike most low-priced motor cars, the motor is suspended in the most approved method, without the use of a sub-frame. The gears operating the half-time shart and pump are of the helical type and noise-less. Lubrication of the bearings of the motor is by force feed, a dash gauge indicating the pressure. Two and one-half gallons of oil carried in the self-contained reservoir is sufficient to lubricate the motor for 500 miles without attention.

A four-cylinder water-cooled motor with a bore of 4 I-2 and stroke of 5 inches, gives an ample 30-horsepower. It is cooled by extra large water jackets, a positive pump and special fin tubular radiator of ample size. The crankshaft of heat-treated steel, ground to size, is I 3-4 inches in diameter. The valves are on opposite sides and mechanically operated; they are constructed of steel with nickel-steel heads, bevel-seated.

One finds the frame is such as is used on the most expensive motor cars. It is of cold-rolled pressed steel, 4 inches deep with 3 1-2-inch drop in the rear to allow for full elliptic springs. In front it is narrowed 3 inches to insure turning in a small space. The front axle is I-beam, one piece, drop-forged, with spring seats 4 inches wide forged integral. The rear axle is semi-floating, the live shaft being I 3-8 inches in diameter and the material 3 1-2-per cent nickel steel. The axle tubing is 2 1-2 inches in diameter of seamless steel. The transmission is integral with the rear axle.

Being provided with a magneto, there is no commutator, and a consequent absence of surplus wiring. The car is sold with two oil side lights, tail light, horn and complete set of tools, for \$1,500. The purchaser has the choice of three styles of body—touring car of the five passenger type, baby tonneau, and roadster. The car has a clearance of 11 1-2 inches, 110-inch wheel base, and tires 34 x 3 1-2 all around.

INTER-STATE "THIRTY" PRICE NOT REDUCED

In the description of the excellent car made by the Inter-State Automobile Company, Muncie, Ind., which was given in The Automobile for November 11, the statement was made that "this one belongs in the \$1,500 class." This statement in fiself would not have been misleading had it been explained and the real price of the car mentioned. As it was, however, the price was accidentally omitted, and the statement as quoted above was not explained.

What was actually meant was this: beginning about a year and a half ago, when the first of the cars listing at \$1,500 and close to that were brought out, the phrase "\$1,500 class" was coined to express the idea that a car belonged with these cars. Many of these cars actually listed as low as \$1,200 and still others ran up in price as high as \$1,800, but they were gathered together in one class, because of being natural competitors.

This class has grown and grown each year in both numbers and quality, so that it represents the logical middle or medium price car of today. The intention of the aforementioned remark was to class the Inter-State Model 30 with these cars, and not to indicate any lowering of the price. On the contrary, the demand has been such that an increase would be more reasonable.

TABLE OF WHEEL SIZES AND RIMS

Very few people, aside from those directly concerned with the wheel, rim or tire business, realize the large existing differences in wheel sizes demanded by the various makes of tire. The ordinary person thinks that he may choose his tire at random. So he may, but after that the wheels have got to be changed so as to allow of the use of that particular tire. The attached table, compiled and distributed gratis by the Firestone Tire & Rubber Company, Akron, O., shows this plainly, and in exact figures. The sizes there given demonstrate this fact more plainly than hundreds of words would. Thus it shows that having 36 by 41-2-inch tires on a car, say Fisk demountable, should it be desired to change to Continental demountables of an equivalent metric size (920 by 120), it will be necessary to have wheels

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increased in diameter from 22 13-16 inches to 25 3-16 inches. Even then, if it was later on desired to change to Fisk bolted on tires of the same size, a 25 1-2-inch wheel would be required. Also, clincher and universal tires would call for wheels 26 21-32 inches in diameter. Since no putting-on tool for wood wheels has ever been invented, this means new wheels every time.

Wilmington, Del.—Work has been about completed upon the new garage of the Wilmington Automobile Company, on West Tenth street, and the concern expects to occupy the building some time in September. It will then have one of the most completely equipped and spacious garage buildings in the country, and the largest in Wilmington. The structure will be 85 by 114 feet in size and three stories high. The first and second will be used for storage and the third for a repair shop. The agency for the Peerless, Stevens-Duryea and Franklin cars is held.

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Texan Traveling Salesman Who Drives a Rambler

M. M. Hinton, who makes his headquarters in Dallas, Tex., has a territory where people order their groceries by long-distance telephone and ride twenty miles to visit a neighbor. He has driven his Rambler fourteen thousand miles while making his rounds

INTER-MOUNTAIN AUTO SHOW AT SALT LAKE

SALT LAKE CITY, Nov. 20—The great Inter-Mountain West is to have an automobile show. It will be held in this city, the fast growing metropolis which furnishes cars to Utah, Idaho, Wyoming, Nevada, Montana and western Colorado. The dates are Feb. 19 to 26. Such is the announcement of the Utah Automobile Dealers' Association. This organization, composed of the leading dealers of the State have already secured the Auditorium with a floor space of 150 by 200 feet. A local firm of architects is now engaged in laying out plans for the booths and an extensive scheme of decoration.

W. D. Rishel, the well-known Salt Lake newspaper man, has been engaged as manager and has already opened offices at 1-3-5 East First South street and began active work.

Salt Lake is a mecca for cattlemen, sheepmen and mining men during the long winter months. These men are the largest purchasers of machines in the West, and it is possible many sales can be booked during the show.

HARTFORD WANTS NEW ARMORY FOR SHOW

HARTFORD, CONN., Nov. 22-Now that the new State armory and arsenal is completed the old talk of holding the next Hartford automobile show there is revived. The new structure has a greater floor space than Madison Square Garden, hence it is obvious that it would be an admirable place in which to hold an exhibition of this nature. However, the building is limited strictly to the use of the state militia, and no civic functions of whatsoever nature may be held here. The location is good and cars could be run in off the ground floor without difficulty, and in addition to the main floor there are galleries and side rooms as well as a spacious basement. That a motor car show in such a building would be a drawing card is obvious, for it is a certainty that each and every dealer in the town, and now there are more than last season, would do all possible to make a good exhibition. But the State of Connecticut says, "No," so there the matter ends, and the dealers can but sign and find a smaller hall.

SYRACUSE SHOW, WEEK OF MARCH 12

SYRACUSE, N. Y., Nov. 20—The Syracuse Automobile Dealers Association has practically decided to hold its show this year the week of March 12. Instead of holding it for four days, as last year, it will next spring be put on for a full week, in the New York State Armory, every inch of space being occupied according to predictions. Already committees are commencing to figure upon the details of the big exhibition.

TWYMAN SAYS SOUTH IS OREAT FIELD

LOUISVILLE, Ky., Nov. 22—B. W. Twyman, who is thoroughly familiar with trade conditions of the automobile industry in the South, has returned from Atlanta. In discussing the Atlanta show, he said:

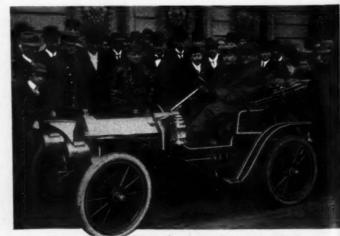
"It is very doubtful whether the automobile manufacturers in the United States realized the important part the South is destined to take in the automobile industry until after the Atlanta show. While all of the principal manufacturers were more or less soliciting business and taking just what was handed to them almost voluntarily, they did not fully realize the immensity of the possibilities of the States south of the Mason Dixon Line. The show, while not so large as those given in New York and Chicago because the building would not permit it, was in every way an ideal, modern, up-to-date automobile show both in decoration, arrangement, management and all. It is usually estimated that about one in every twenty persons who visits an automebile show in New York or Chicago are really interested in the purchase of a machine, while in Atlanta, I am satisfied that this could easily be reduced to one in five. What surprised me most was the amount of knowledge of automobiles and their construction found in the average prospective customer. This shows very conclusively that the automobile is receiving serious consideration by the entire South."

TEST PROVES WORTH OF LITTLEST CAR

Detroit, Nov. 22—With the idea of thoroughly testing out the ability of the "Littlest Car," the manufacturers of the Demotear have sent two of the sturdy little fellows on State wide tours. One of these will be across Michigan and the other will traverse Ohio. How far the cars will go beyond has not yet been determined, but the marvelous manner in which they have taken to the unusually severe work may bring forth many thousand miles of additional tour.

The object of the test is to give the runabout a test that will prove its dependability beyond question. Leaving the Hotel Pontchartrain, Detroit, last Monday, the Michigan car traveled through Ypsilanti, Ann Arbor, and Howell, en route to Lansing. On Friday evening, Q. B. Harper, of Harper & Aldrich, the Lansing and State agents, wired the factory that up to that time every one of the fifty-seven varieties of bad road had been encountered and successfully overcome. Considering the season of the year, with its deterrent effect on all touring, the showing of this \$550 car has been such as to convince the most skeptical of its real merit.

In the illustration is shown the Michigan car as it appeared just before leaving Detroit for its dash across the State. This cut shows that the car is a regular stock model, and not a car especially prepared for this trip. It may be noted, too, that the driver and passenger were not particularly light weights.



Demotcar Leaving Detroit for Trip Through Michigan

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Getting Ready for the Night On a Camping Trip

The illustration above shows two important members of the Maxwell-Briscoe Motor Co.'s official family pitching camp for the night. This was upon the recent occasion of Ernest Coler and J. D. Maxwell's going deer hunting in a Maxwell "Sportsman"

Moon Shines All Night-The Moon Motor Car Company's St. Louis plant has been running overtime for several weeks and a large force of men is now working at night in the machine shop. Deliveries of 1910 cars are now being made, and beginning in December the factory will turn out five or six cars daily. In pursuance of the company's policy to install the most modern machinery, several new tools have been put in the machine shop during the past week. One of these is a specially made boring machine, which drills six large ports at one time; this is used on the cylinder heads of the new "30." Fiftyfour chassis were counted in the assembly room at one time last week, 38 being of the new model 30.

Robbed of \$20,000 by Employee-Coincident with the disappearance of the former paymaster, Chauncey W. Hammond, the E-M-F Automobile Company, of Detroit, now controlled by Studebaker interests, found itself minus a week's pay roll, amounting to more than \$17,000. A short time after the loss was discovered and reported to the police young Hammond walked into one of the police stations and gave himself up, declaring that he knew nothing of the theft. The abstraction of the money was a very clever job, paving bricks being substituted for the actual "mazuma," without the change being detected, until the satchel supposed to contain the money was opened at the factory to start paying off the company's employees.

Boston Auto Row Moving?—The Peerless Motor Car Company has leased for 20 years a building covering an area of

over 10,000 square feet on Beacon street, near the intersection of Commonwealth avenue, which is being built by Eugene N. Foss. Another section of the same property is reported to have been taken by a second well-known automobile concern, and the chances are that the remainder will meet the same fate. The property is within two blocks of the terminus of the proposed Riverbank subway, and is in the hands of Lawrence Whitcomb, of Whitcomb, Wead & Company, who is also treasurer of the National Brake & Clutch Company.

Franklin's Stock of Tubing-Over ten miles of steel, brass and copper tubing-56,527 feet at the last inventory, to be exact-are kept in stock at the Syracuse, N. Y., factory of the H. H. Franklin Mfg. Co. This stock, it is said, would be exhausted in six months if no more was purchased. The larger sizes are used for the exhaust piping and for axles. Tubular axles are retained as a feature of Franklin design because the company believes that they are stronger and lighter than the I-beam type. The metal used in this tubing is 3 1-2 per cent nickel steel, with an approximate tensile strength of 240,-000 pounds per square inch.

Economy of Motor Farming—Reports from Oberlin, Kan., tell of a farmer in that vicinity who recently finished plowing and seeding a thousand acres of wheat, using a four-cylinder, 90-horse-power gasoline tractor. He used 2,107 gallons of gasoline, costing \$266.84, and about \$90 worth of lubricating oil. Expenses for men and their board, and incidentals were \$250. The total cost was about \$600, or 60 cents an acre. Four

drills were used, covering 36 feet at a time, and the packers were hitched just back of the drill so that drilling and packing were carried on at the same time, thus economizing still further.

Lexington Goes to Connersville—According to information received from the Lexington Motor. Car Company, all previous reports concerning this company's intentions have been totally incorrect. The Lexington Company will not stay in Lexington, despite the best efforts of that city's population; but, on the contrary, will remove to Contartsville, Ind., shortly after January. The local capitalists failed to secure to 95 shares of stock held by E. D. Johnson, president of the company, who is a Connersville man and most interested in the company's removal.

On the Banks of the Wabash—The Muncie Clutch & Gear Company, of Muncie, Ind., has ben consolidated with the Wabash Gear Works, of Terre Haute, Ind. The latter concern has been in business for some years, while the former is comparatively recent. The new management will be largely under the control of A. W. Wagner, who has become president of the Warner Gear Company, and H. L. Hooke, formerly of Muncie, who has become secretary. With greatly increased capacity, the company will continue the manufacture of change-gears, clutches, levers, etc.

Lecture on Battery Maintenance—Bruce Ford, of the Electric Storage Battery Company, delivered an interesting lecture last week on the care and operation of electric automobile batteries in the Chamber of Commerce, Washington, D. C. The lecture was illustrated by lantern slides and was largely attended. Electric automobiles are very popular in the Capital City and their owners derived much useful information from the evening's talk.

To Make Steering Wheels—Detroit's prestige as an automobile manufacturing center will be increased by the establishment of the Detroit Steering Wheel and Wind Shield Company, incorporated last week. The company is capitalized at \$100,000, of which half has been paid in. The stockholders are Albert S. Keen, W. H. Honkle, Howard E. Coffin, Hugh J. Denk, Titus Denk, John A. Galvin and Thaddeus Galvin.

Needed 500 More Men—The Maxwell-Briscoe Motor Company's Newcastle, Ind., plant sent in the biggest request for help yet received by the free employment bureau in the office of the State statistician at Indianapolis when it telephoned for 500 men to be sent immediately. A rush of orders was the cause of this sudden increase in the regular working force of the factory.

Error in Hartford Advertisement-In the advertisement of the Truffault-Hart-

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One of the Assembling Rooms at the Rider-Lewis Factory, Anderson, Ind.

ford shock absorber last week a typographical error made it appear that these devices were fitted by manufacturers only at extra charge. This was, of course, misleading, as a number of prominent makers include these shock absorbers in their stock equipment on every car which is sent from the factory.

Grabowsky Building Addition—The Grabowsky Power Wagon Company is building an addition to its present factory building in Detroit. This move has been found necessary in order to take care of the demand. The company is also looking about for a suitable building to acquire in addition to the one now occupied.

And Another Detroiter—Another new automobile manufacturing company is to be located in Detroit. The newcomer is the Abbott Motor Company, which has a capital stock of \$300,000 and has just filed articles of incorporation at Lansing Plans are said to be in preparation for the erection of a large factory.

Receiver for Rubber Company—Chester O. Henderson, of Indianapolis, made application recently for a receiver to be appointed for the Goshen Tire & Rubber Company, and accordingly Judge Dodge, of the Elkhart circuit, named George P. Rowell to fill the office. It is likely that the business will be wound up.

Chadwick Doubles Capitalization—The Chadwick Engineering Works, of Pottstown, Pa., which makes the six-cylinder Chadwick cars, has increased its capital stock from \$500,000 to \$1,000,000.

IN AND ABOUT THE AGENCIES

Studebaker, Atlanta, Ga.—The Studebaker Automobile Company has purchased the interest of G. W. Hansen and his associates in the Georgia Motor Car Company, which will be made subsidiary to the Studebaker company and consti-

tute a branch of the South Bend concern. Mr. Hansen will continue as manager. The branch will control the two Carolinas, Georgia and Florida. A new building is under construction at 45 Auburn avenue. It is estimated that one-twentieth of the Studebaker output will pass through this branch.

American Simplex and Velie, Syracuse, N. Y.—Melville W. Kerr and James E. Doane have combined under the name of the Kerr-Doane Motor Company to handle the American Simplex and the Velie. The new firm intends to build a hand-some garage and showroom and is now looking for a suitable location.

Moon, Atlanta, Ga.—The McConnell-Kurfees Company, of 30 North Pryor street, has contracted with the Moon Motor Car Company, of St. Louis, for its agency in Georgia, the Carolinas, Florida and Alabama. Sub-agencies will be established in the latter States.

Ohio, New York City—The Harry S. Houpt Company has been made Eastern distributor for the Ohio, manufactured by the Jewel Carriage Company, of Cincinnati. The New York office of the Houpt Company at Broadway and Sixtyeighth street will be headquarters.

Koehler Lines, Newark, N. J.—The H. J. Koehler Company, which holds the New York City and vicinity agencies for the Hupmobile and Rider-Lewis, has purchased the property at 289-293 Halsey street, Newark, N. J., which will be its headquarters for New Jersey.

Rambler, Newark, N. J.—The Newark Automobile Company has taken the Rambler agency for this section. At present the company is located at 151 North Sixth street, but hopes to move into its new building at 316 North Broad street by the end of the month.

Ohio, Forsyth, Ga.—The Ohio Motor Car Company, of Cincinnati, has con-

tracted with the Georgia Automobile Company, of Forsyth, to act as its agent in Georgia. Branches will be opened in Macon and Atlanta.

Columbia, New York City—The Victor Auto Storage Company, metropolitan agent for the Columbia, is fitting up an attractive salesroom on Broadway, near Fifty-second street, in which to exhibit the 1910 models.

Cole, Savannah, Ga.—Leonard Cater and W. A. Logan have taken the agency for the Cole Motor Car Company. They will act under the name of the Cole Motor Sales Company, with headquarters at 140 Bull street.

Croxton-Keeton, Johnstown and Altoona, Pa.—S. W. Fisher, Pittsburg manager for the Croxton-Keeton Motor Company, has arranged for the establishment of agencies in Johnstown and Altoona, Pa.

Rambler, Brooklyn, N. Y.—Kenney Brothers, who have the local agency for the Rambler, announce that they expect to be in their new quarters at Bedford avenue and Sterling place not later than December 1.

Pullman, Atlanta, Ga.—The York Motor Car Company, of York, Pa., maker of the Pullman, is about to open a southern branch at 10 Auburn avenue, Atlanta, under the management of Capt. Heidt.

Great Western, Niagara Falls, N. Y.— The Great Western Automobile Company, of Peru, Ind., has made arrangements with Swick & Pattison to handle its line in Niagara Falls, N. Y.

Michelin Tires, Kansas City, Mo.—The Michelin Tire Company announces the opening of a branch at 1926 Grand avenue, Kansas City, Mo., under the management of Wayne Murray.

Republic Tires, Buffalo, N. Y.—The Republic Rubber Company, of Youngstown, O., has opened an agency at 46 Chippewa street, at which Republic tires will be sold.

Hupmobile, Jamestown, N. Y.—Jacobson Brothers, located at 701 North Main street, Jamestown, N. Y., have taken the agency for the Hupmobile for Chautauqua county.

Hupmobile, Savannah, Ga.—Messrs. Brockett and Hazzard have taken on the agency for the Hupmobile and will supply this section of Georgia.

Inter-State, Pasadena, Cal.—Washburn Brothers, of 1032 Mission street, South Pasadena, have taken the agency for the Inter-State car.

Oakland, Syracuse, N. Y.—Willis & Van Brunt, agents for the Oldsmobile in this district, have added the Oakland to their list.

Regal, Tampa, Fla.—Minich & Kang have secured the agency for the Regal car in Tampa and vicinity. 25, 1900

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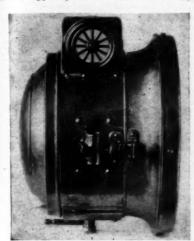
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THE RAMBLER'S SPECIAL LAMP

Another distinctive feature has been added to the new Rambler for 1910, by the equipment of all models with a Rambler lamp of special design. The top of the lamp is shaped to include the Rambler spare wheel in relief. This spare wheel, aside from its value to the owner, has become a most valuable asset to the Rambler people from an advertising standpoint. In every advertisement a circle display is used. At the upper points of the circle appear



New Rambler Lamp Design

the front and rear wheels of the car, between the two points the spare wheel attached to the car, and now the spare wheel appears in the lamp.

PERSONAL TRADE MENTION

Charles J. Horan, formerly with Ernest Flentje, of Cambridge, Mass., has taken a position with the Kilgore Mfg. Co., 585 Boylston street, Boston.

KETSTONE OPENS PHILA. OFFICE

PHILADELPHIA, Nov. 20-The Keystone Lubricating Company, which makes Keystone Motor Oil, has opened an office and warehouse at 1327 Race street. Offices on the upper floors will be sub-let to concerns of good repute in the automobile accessory business. C. E. Huhn, formerly manager of the Puritan Soap Company of this city, has been appointed local Eastern manager of the automobile department.

RECENT TRADE PUBLICATIONS

RECENT TRADE PUBLICATIONS

L. Blériot, 16 rue Duret, Paris, France—Louis Blériot claims the honor of being the first to publish a catalog in which aeroplanes are listed on a commercial basis. His book-let contains fifty pages, artistically bound in rough green paper and well illustrated. The subject matter includes first the rough materials for aeroplane construction. The Blériot factory has unusual facilities for obtaining wood of the quality and grain necessary for this work, and also makes several forms of patented joints for the framework. Further on the Anzani, E.N.V., Gobron and Gnome motors are described and listed, and finally come the three types of aeroplane which Blériot has made famous: type XI, for one passenger, which crossed the English Channel; type XII, for two passengers, and type XIII, for three. The illustrations include photographs of many types of Blériot machines, dating back to 1901.

Sociétés des Moteurs Gnome, 49 rue Laffitte, Paris, France—Many of the successes of the Aviation Meet at Rheims were due in large degree to the efficiency and reliability of the Gnome motor. Although the most radical in its departure from standard practice, this motor has overcome prejudice and built up a most enviable reputation. As will be recalled from previous descriptions, it has seven cylinders mounted radially around a single stationary crank. The cylinders and crankcase revolve, and their weight acts as a flywheel. The 50-horsepower motor weights 167 pounds, and the 100-horsepower, 14-cylinder type weighs 220 pounds, the cylinders of both being 4.33 by 4.73 inches bore and stroke. The motors are described in a single-sheet folder illustrated by photographs of Farman and Voisin biplanes in flight.

Société Anonyme Antoinette, 28 rue des

Farman and Voisin biplanes in flight.

Société Anonyme Antoinette, 28 rue des Bas-Rogers, Puteaux (Seine), France—This weil known maker of aeronautic motors and aeroplanes has issued a 12-page pamphlet in which its wares are described. Antoinette motors are made in three sizes, namely, 24 and 50-horsepower, 8-cylinder, and 100-horsepower, 16-cylinder, weighing 110, 198 and 330 pounds respectively. The Antoinette monoplane, made famous by Latham's daring feats, is also described at some length; it is distinguished by a truss construction, in which the members work only in compression and tension. These machines are made to order, many of the details being left to the discretion of the purchaser; the supporting surfaces varies from 300 to 400 square feet, with a weight, empty, of about 1,000 pounds.

feet, with a weight, empty, of about 1,000 pounds.

New York School of Automobile Engineers, New York City—This organization has sent out to the trade and to others interested a pamphlet entitled simply "Motoring," and sub-titled "Extravagance and Danger vs. Economy and Safety." This case will certainly interest most amateur drivers. The school in question aims not so much to give practice in driving as to explain the underlying principles of the automobile. It is argued that anyone can easily learn to steer and change gears, and make a show of being a competent driver, and yet be completely unnerved by some slight but unusual accident which he has not encountered before. Such untrained drivers are dangerous not only to those who ride with them, but to all who use the same thoroughfare.

Chas. E. Miller, New York City—In preparation for the Atlanta Show this well-known manufacturer and jobber of automobile supplies has brought out a 100-page advance catalog for 1910, of which no less than 75,000 have been ordered from the printer. These will be distributed at Atlanta and at the other automobile shows. Emblematic of the scope of the catalog is the front cover, which shows an automobile in the center, and a motorcycle, a commercial truck, a motorboat and an aeroplane respectively in the four corners. As usual, the articles listed in the catalog include about everything that an automobilist could desire.

West Side Y. M. C. A., New York City—One of the first to start an automobile school, this hustling organization has taken up aeronautics, and under the direction of Wilbur

R. Kimbail has already a prosperous class in this new science. The aims and methods of the course are set forth in a pamphlet entitled "Aeronautics," The subjects of instruction include the law of gases, resistance and supporting power of the air, shapes of surfaces, kites, lift and drift, soaring and gliding flight, screw propellers, motive power, power-driven models, man-carrying apparatus, superposing surfaces, equilibrium, control, transmission systems and dirigible balloons.

Rockwell Furnace Company, New York City—This catalog should be of great interest to automobile manufacturers and repairmen, listing and describing as it does many kinds of furnaces for forging and welding parts. The Rockwell furnaces are adapted to the use of either oil or gas, and seem neat and workmanlike in construction. The catalog contains 40 pages, 9 by 12 inches, and is profusely illustrated, both with pictures of the various machines themselves, and of factories showing them in actual use. Anyone who contemplates installing a furnace for forging and welding work would do well to consult it.

The American Oil Pump and Tank Com-

consult it.

The American Oil Pump and Tank Company, Dayton, O.—'Dayton Leads the World' is the proud inscription on the cover of this booklet, and it is emphasized by a Wright aeroplane in full flight above the "American" pump which occupies the foreground. These pumps are all double-acting, giving a rapid and continuous flow of liquid, and are made in several styles and sizes, adapted to different forms of storage. The same company makes tanks and is prepared to furnish complete storage outfits, for either private or public garages, and for either gasoline or lubricating oil.

Motor and Manufacturing Works Company.

gasoline or lubricating oil.

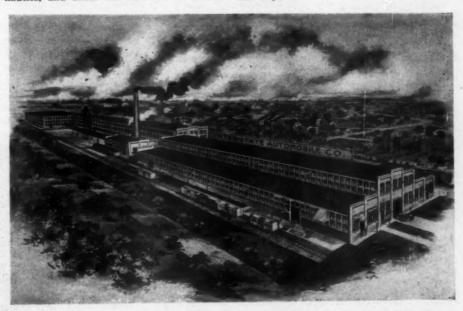
Motor and Manufacturing Works Company, Geneva, N. Y.—"Ejector" Mufflers form the primary subject of this company's catalog, which might well have been brought out by the Society for the Prevention of Noise. "Ejector" Mufflers are claimed not only to discharge the exhaust gases without noise, but also to reduce the pressure in the exhaust pipe below atmospheric, thereby creating a suction on the cylinder at the beginning of the exhaust stroke. Other products listed in the catalog are cutout valves, horn-blowing valves and foot pedals for their operation.

W. H. McIntyre Company, Auburn 194

wing vaives and toot pedals for their operation.

W. H. McIntyre Company, Auburn, ind.—
A striking cover of brilliant orange hue encloses the specifications of the 1910 McIntyre line, which includes pneumatic-tired vehicles of the standard type as well as the high-wheeled machines usually connected with this name. The new models follow the most advanced practice in having very large wheel diameters, the same being 36 inches on both of the two four-cylinder models selling at \$1,250 and \$1,750. A two-cylinder, \$600 runabout also figures in the catalog.

Liggett Spring & Axie Company, Pittsburg—The present scarcity of automobile parts lends additional interest to the catalog of this maker of automobile springs and axies. The catalog in question is devoted to springs, and shows them in all the forms customarily used: full, three-quarters, and half elliptics.



Perspective View of Inter-State Factory at Muncle, Ind.

VOL.



Foy Electric Tail-Light-The oil taillight, so often unreliable, has found a formidable rival in the Foy light, made by the Jordan Equipment Company, Beverly, Mass. This consists not only of the tail-light itself, with a tungsten-filament light, but also of a number-holder integral with the frame of the lamp, and arranged so that the number plate is il-luminated by a broad band of white light. The number plates are interchangeable, so that different ones may be kept for use in different states, and changed with little difficulty.

The light is operated by an ordinary ignition battery, either storage or dry, and it is said by the makers that four dry



ELECTRIC TAIL LIGHT AND NUMBER PLATE .

cells will operate the light with average running at night for ten weeks. The electric filament is German tungsten, cleverly hung up between two spring cushion terminals which prevent it from jarring out and also protect the filament. The lamp is fitted with a large red bull'seye of the standard railroad type for signalling purposes, and the entire under part of the lamp, above the number plate, is a piece of heavy ground glass, which throws a well-diffused white light on the plate. Perhaps the greatest convenience about the lamp is that it is turned on or off by a switch, which can be placed any-where within easy reach of the driver. The tail-lamp can thus be lighted without even stopping the car.

The lamp and holder are neat and at

The lamp and holder are neat and attractive in appearance, and are claimed to cover the letter of the law in every State in the Union. The machine work is done by the Randall-Faichney Company, of Boston, which statement is a guarantee of excellence in this direction. The outfit sells for a reasonable price. The outfit sells for a reasonable price.

Perfection Magnetos and Battery Chargers—The Economy Mfg. Co., which makes these magnetos, has succeeded the Perfection Magneto Company, of Anderson, Ind., and is now located in Pittsburgh. Many of the former manufacturer's workmen have been engaged, and modern machinery has been

installed to secure the production of the magnetos at a minimum factory cost. The jump-spark magneto is designed to be driven by friction or belt in any manner that will give the necessary speed of 2,500 revolutions. It has a drum type armature with laminated core, wound with double silk covered wire and thoroughly involved. oughly insulated. The magnets are of the Economy Mfg. Co.'s own make, of the best tungsten magnet steel. Brush holders are so constructed that the magneto may be run in either direction. Practically the same machine is adapted to service as a battery charger by the addition of an automatic cut-out to prevent discharge of the battery back through the magneto when the latter is idle. All that is necessary to install the battery charger is to adjust the machine so that its pulley makes the contact with the flywheel and to connect its two wires to the binding posts of the battery.

Vulco-Nu-Tread Kit-The old expres-on, "a stitch in time," is particularly applicable to fixing a cut in a tire casing. No matter how small the cut or hole may be, if it is neglected, sand and water or both will work into the fabric and loosen it from the tread. The Hazen-Brown Company, 100 South street, Boston, which is well known as one of the largest makers of shoe cement in the United States, has placed upon the mar-ket the Vulco-Nu-Tread repair kit with the design of meeting the requirements of just such a contingency, and saving the tire for a long period of future use. The driver of the car having one of these kits will be in possession of an outfit whereby repairs can be made immediately, thus saving tires from damage by de-lay, as the kit contains everything necessary for fixing any cut in a casing. is packed in a neat wooden case, containing full directions for use.

Nu-Tread, which is a part of the kit, is also put up separately in collapsible

tubes, and can be used independently of Vulcanoid—another essential of the outfit. Nu-Tread is virtually a rubber compound in a plastic form, and fills a cut
satisfactorily with very little shrinkage,
has good adhesive properties and is not
easily loosened by wear.
Vulcanoid is a fluid for cold

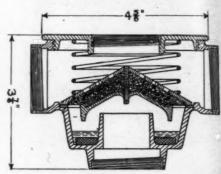
vulcanizing, and the makers guarantee results when prop-erly applied, and that it will perfectly cure the rubber.

In addition to the above,

Hazen-Brown Company is the maker of the Pluto vulcanizing kit which has proved so popular for cold vulcanizing; the Tire Doctor kit, which is a combination of both the Pluto and Vulco-Nu-Tread; the Pluto press, a handy tool with which sufficient pressure can be ob-tained to make repairs; Hazenoid rubber cement; mat and tire revivers, for giving a new finish to those articles;

enamel reviver for automobile work; alumino finish, a ready aluminum paint for the engine accessories, which is waterprowoodnd its , and does not tarnish; and an enamel eviver for polishing enameled bodies of mobiles and other highly finished auto or metal work.

Whiting "Airburetors"—O. J. Garlock & Company, of Palmyra, N. Y., have brought out two devices known as the "Airburetor-Filter" and the "Airburetor-Mixer," intended to improve the carburetion of an engine, working in connection with the usual carbureter. Both are intended to strain thoroughly all the vapor which reaches the cylinders to vapor which reaches the cylinders, to eliminate every particle of foreign mat-ter; and in addition—which may seem



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strange to the autoist who has suffered from watery gasoline—both are intended to "humidify" the mixture by the addition of a very small amount of water vapor. The reason for this is the im-provement in the running of the motor which is often noticeable at night, and which is often noticeable at light, and which is supposed to be due to the humidity of the air after dark. A motor with a "humidified" mixture should therefore run as well by day as by night.

Of these two devices the "Filter" is

intended to go on the air inlet to the carburetor, and the "Mixer" in the inlet pipe between the carburetor and the inlet valves. The "Filter" consists of a chamber full of asbestos fiber or steel wool through which the air is strained, wool through which the air is strained, and containing in the bottom a layer of "Humidifier Compound No. 17," which adds the desired moisture. The straining out of all dust in the air is believed to result in less friction deposit.

The "Airburetor-Mixer" is adapted to replace the T-connection in the ordinary four-cylinder inlet nine. It thus acts on

four-cylinder inlet pipe. It thus acts on the whole mixture, instead of on only the air before carburetion.



COMPONENT PARTS OF VULCO-NU-TREAD TIRE KIT